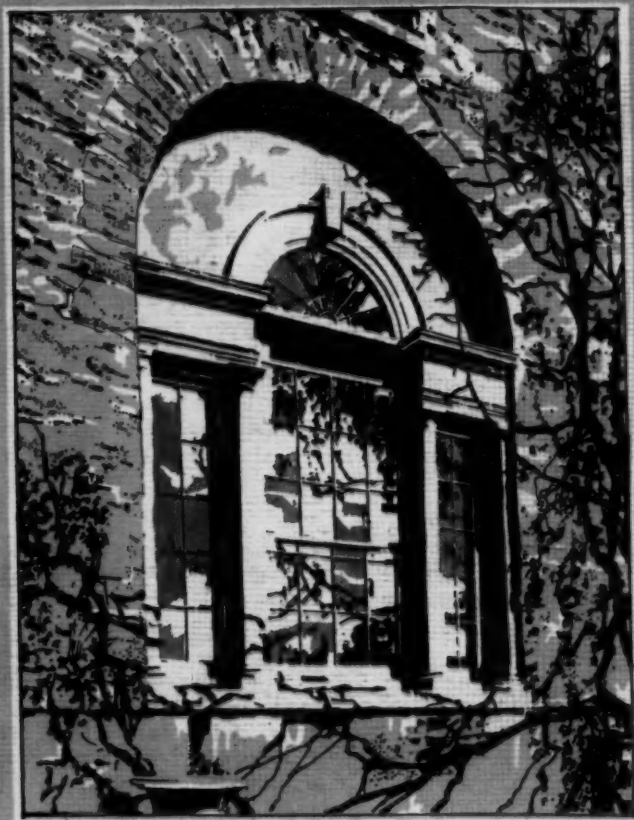


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THE ARCHITECTURAL FORUM



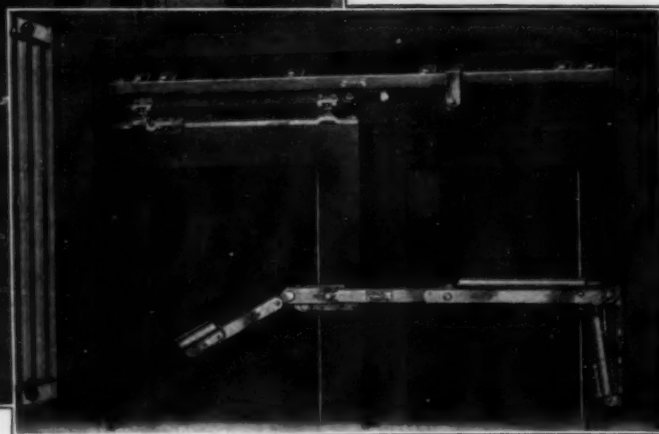
JULY
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*Elevator Lobby, The Allerton House, Chicago
Architects Murgatroyd, Ogden & Skyles*



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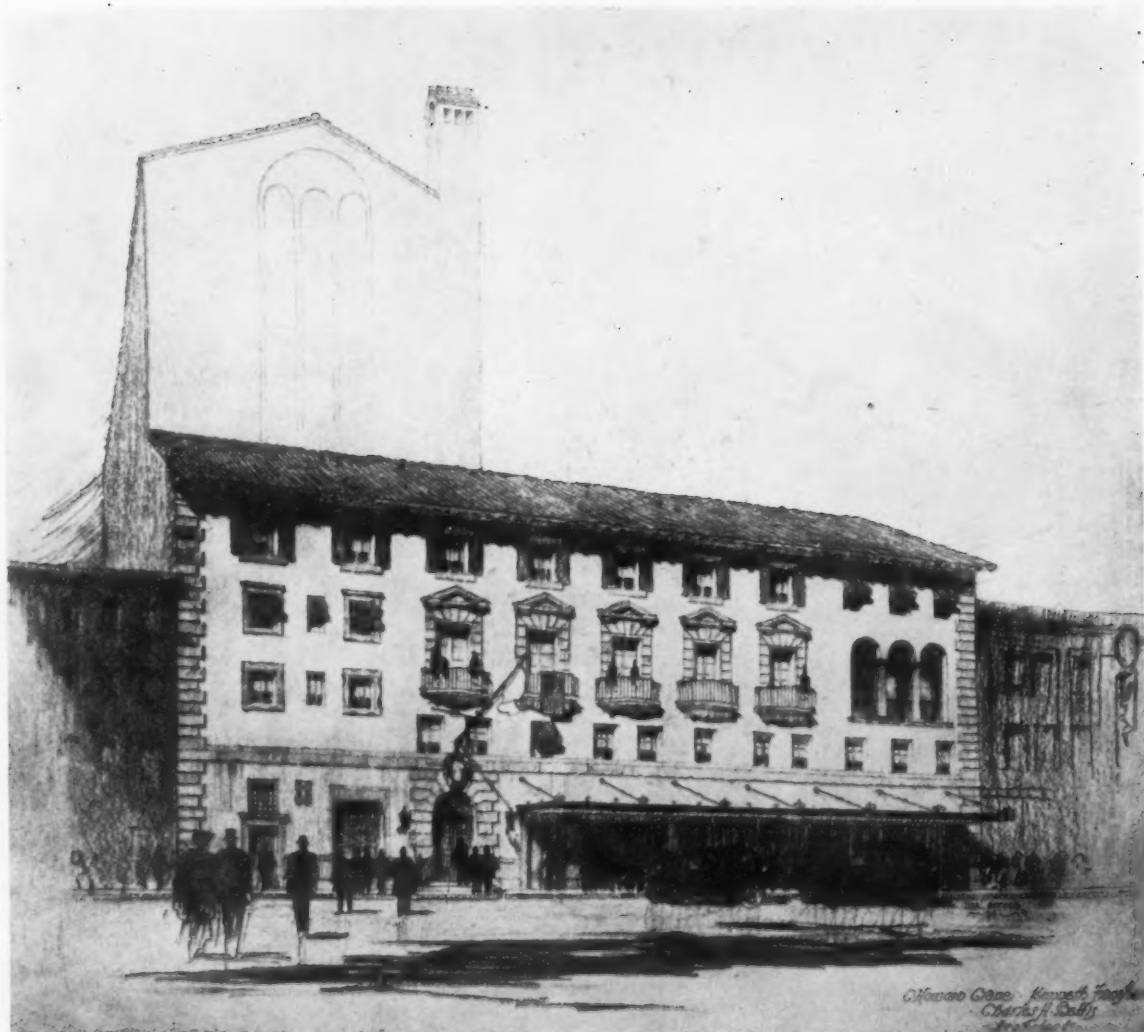
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THE GUILD THEATER, NEW YORK

C. HOWARD CRANE, KENNETH FRANZHEIM, AND CHARLES HUNTER BETTIS, ARCHITECTS

From a charcoal drawing by Charles Hunter Bettis

The ARCHITECTURAL FORUM

VOLUME XLIII

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NUMBER 1

The Problem of the Pediment

By MATLACK PRICE

IT is doubtful if any architect, certainly any architect who has had occasion to design one, would deny that the pediment is a problem, and none the less so by reason of the amount of effort expended upon it by the ancient Greeks, and by many others who have attempted it in later years.

The term "pediment" is here used inclusively, and is intended to mean, as well, the tympanum, that important triangular space designed to be filled, well or indifferently, by the sculptor. In the actual framing of that space there is plenty for the architect to do, what with split fillets and the management of the mouldings where the oblique line takes off from the horizontal,—plenty to do even if he stops short of doing too much, which he sometimes does. It is a mistake, certainly, to allow distinctly architectural elements, such as dentils or modillions, to infringe upon the space, restricted enough at best, in which the sculptor is to work. Many otherwise very good modern pediments have been complicated, to their distinct detriment, by this architectural encroachment, and the sculptor has been correspondingly handicapped.

Our premise here, at the risk of seeming obvious, is that the pediment is a very real problem, and one which too often fails to receive an adequate solution because two minds,—two men, not one,—the architect and the sculptor, are needed to create it. And, after the architect has provided a fair triangular space, the lion's share of the problem rests squarely on the shoulders of the sculptor, provided he is allowed a reasonable chance to exercise the creative skill of which he is capable without interference.

Professor Gardner, of Oxford, says ". . . the composition of a pediment is as exactly regulated as that of a sonnet or a Spenserian stanza; the artist has liberty only in certain directions, and must not violate the laws of rhythm." This is very true, even allowing that it demands some general agreement as to just what is meant by rhythm, and just



California of Today
Central Figure of Second
Pediment, California
Capitol, Sacramento

what the rhythm of a pediment composition should be. The problem of the pediment has, from its nature, been alternately a favorite battlefield and playground for professors of classical archaeology, virtually any one of whom would be hopelessly incapable of designing a pediment, no matter how many thousand words of good advice he might be able to write regarding it.

In the matter of pediments we live, perhaps, more oppressively in the shadow of the achievements of antiquity than we do in that of any other particular of architectural design. There has been a bit too much rhapsodizing about the qualities of certain ancient pediments (notably that of the Parthenon) and not enough thought about the pediments we have tried to make in modern times, or may have to make tomorrow. The Parthenon pediment may not have been quite so good as some classical architectural historians think it, and some modern pediments may not be quite so bad as they consider them. On this point it is distinctly refreshing to find Gardner admitting that all ancient Greek sculptors were not divinely inspired in the design of pediments, even though he extends no laurels to the moderns: "If it be thought strange that so simple a condition as the triangular form of a pediment should prove so trying to the Greek sculptor, it should be observed that modern sculptors have also tried their hands at pedimental compositions, and with very moderate success. It would not be easy to find a pleasing modern pediment. Of course the modern sculptor works at a disadvantage, as the resources on which the Greek relied are not open to him; he cannot vary the sizes of his figures in accordance with their dignity, or fill the corners with reclining river-gods. But even apart from these disadvantages, the difficulties inherent in the form are very great." Such has been the general experience.

In the last sentence of this paragraph, incidentally, there is a distinct contradiction to the opening state-



Pediments of the Temple of Zeus at Olympia
From Restoration in the Metropolitan Museum

ment of its first sentence, in which the professor characterizes the triangular form as "so simple a condition"—a kind of contradiction that robs much technical writing of the clearness which should be its chief characteristic. And even Russell Sturgis says: "The supremely noble statues of the Parthenon pediments may or may not have made up an ideally fine design for the filling of the triangular space at either end"—a statement which, to a student certainly, must seem to beg the question by failing to supply a logical answer.

Among the first of the Greek pediments usually cited as a criterion are those of the Temple of Zeus at Olympia, a late archaic work, often dated as a little earlier than the Temple of Pallas Athene, or as contemporary with it. Judged solely from the remains, and even from the restoration, the composition of the figures seems too pervasively dominated by the shape of the space, and the relative scale of the figures is changed in one of the pediments far more conspicuously than in the other instance, which is likely to confuse the observer, as does any variation from established scale.

In all critical commentaries on the pediments of the Parthenon there is unanimous praise, and not infrequently some phrases that can well be taken as a sort of working basis by the modern sculptor. Nor is it entirely fair to judge exactly the artist's whole intention in the broken fragments that remain, or even in the various conjectural restorations that have been made. The restoration in the scale model in the Metropolitan Museum shows a pair of pediments that seem a little over-crowded and a little too diverse in the different scales of the figures,—but there is a note of inspiration in Sturgis' statement that the Parthenon sculptures "are accepted by all as the most perfect types of the human figure treated grandly in art." The note is still there, even when he qualifies thought about the Parthenon by saying: "Nude forms and drapery alike are the models of all perfection, and there is even a certain added firmness of mass and line, as of figures intended to have a severely limited field which they were to fill. And yet it cannot be said that the admirers of Greek architecture are quite sure, all of them, that the building would be better for what is,



Pediments of the Parthenon
From Scale Models in the Metropolitan Museum



Pediment of the New York Stock Exchange
J. Q. A. Ward, Sculptor

after all, highly realized sculpture in the round." And after a comparison with the high relief metopes, he isolates one of the chief difficulties inherent in the problem of the pediment "... whereas we know that relief sculpture, both high and low relief, is the ideal adornment of a noble building, we cannot be equally sure of the architectural effect of statues set high above the eye, upon the broad shelf above the entablature." Such is the opinion of Sturgis.

Tarbell is less doubtful, but he also is less concerned with the pediment figures as works of architecture than as works of art, when he says "... even in their ruin and their isolation, the pediment figures of the Parthenon are the sublimest creations of Greek art that have escaped annihilation." And we will read further only what Warren said in his

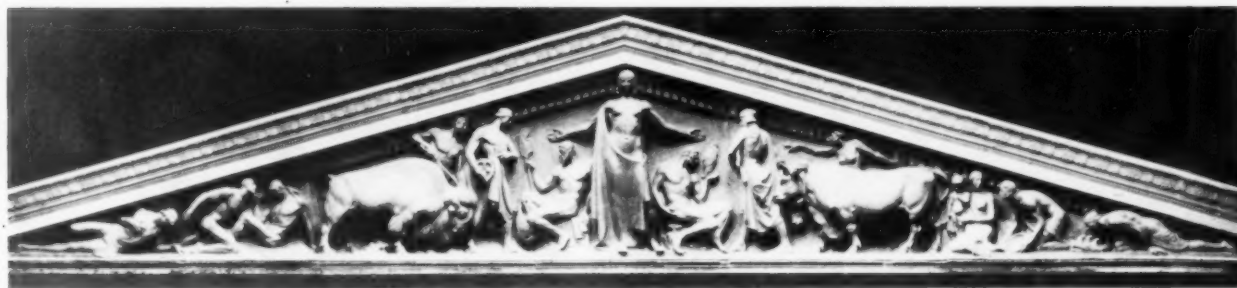
"Foundations of Classic Architecture" before going on to the observation of a few modern versions of the problem of the pediment. The whole danger in the too general and often too extravagant apotheosis of the Parthenon pediments is that architects and sculptors today are inclined to feel that a chance no longer exists to do a good pediment—that the last good pediment in the world was designed (conjecturally) by Phidias, and that there is no use in trying very hard to do a really fine thing today. "The pediment sculptures," writes Professor Warfen, in his lucid discussion of the Parthenon, "were groups of freestanding figures of heroic size, very carefully designed with reference to their mutual relations and to their positions on the building. There was no longer, as at Ægina and at Olympia, a rigid central



One Pediment of the Capitol of Wisconsin
Karl Bitter, Sculptor



Another Pediment of the Capitol of Wisconsin
A. A. Weinman, Sculptor



One of the Pediments of the California Capitol
Representing California of the Period of '49
Edward Field Sanford, Sculptor

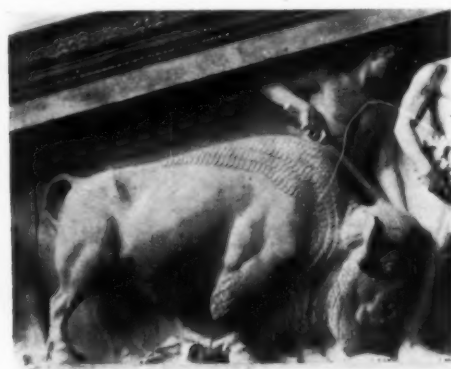
figure separating the two sides. In each case two figures—Zeus and Athena, Athena and Poseidon—balanced each other by an opposition of inclined lines. From the violent action of the central groups, with their miracles which provoke the astonishment of the nearer-divine spectators, the movement diminishes at either side to the cadence of the impassive figures near the angles. The groups—standing, then seated, then reclining—are combined with so harmonious a rhythm of lines that the adaptation to the slope of the pediment seems spontaneous and inevitable. The mastery of the external anatomy of the human form and the naturalism of treatment surpasses anything hitherto achieved in Greece, and reaches the highest bounds of sculpture, with a serene dignity worthy of the most monumental architecture. In all we can trace the directing mind, in the finest figures, such as the 'Fates,' perhaps that of Phidias himself."

This kind of eulogy, even if we disregard entirely its exact basis in the facts involved, or if we admit that it is justified by the facts, has undoubtedly had the unfortunate effect of intimidating the architect and sculptor today, at the same time that it glorified the achievements of classical antiquity. I do not wish to be understood as meaning that the pediments of the Parthenon have been unreasonably over-rated, but I do believe it to be unfortunate that the general effect of such criticism tends to discourage new effort on similar problems. There is no real reason why sculptors should not try with all their ability to design really fine pediments, even if those of the Parthenon have not been equaled in modern times.

With this thought in mind, it is interesting to examine a few important pediment compositions done

in this country, and especially a recent pair designed by Edward Field Sanford for one of the new buildings of the California capitol at Sacramento. Of the two pediments from the capitol of Wisconsin, the arrangement of that by A. A. Weinman is excellent, not only in the scale of its figures but in their relationship and in the clever device of the exedra seat which gives four of the figures a logical pose admirably related to the slope. This is an example of a pediment in which too much architecture has invaded the territory of the sculptor, who would have had greater freedom without the dentils and modillions in the tympanum.

Illogical scale in the figures, as well as a feeling of restlessness, mars the pediment of the New York Stock Exchange, long regarded as a fine modern example of pediment design. The figures are not only out of scale with each other, but with the whole facade, and in four instances seem to hold their positions only by a distressingly precarious margin. Design of this kind may come about through too much belief in inspiration as a guiding factor. Inspiration is a splendid factor in any kind of creative art, but in a problem so exacting as the problem of the pediment, another factor, and one of inestimable value, is intelligence. Intelligence will see an artist through to a logical and well reasoned result, which is a high form of art, even though inspiration may elude or betray him. Of all artistic problems related to architecture, the problem of the pediment demands all the intelligence of which an artist is capable, involving not only a thorough appreciation of the architectural aspect of the thing, but an appreciation as well of the importance of working with the architect, and with a study of the pediment, from



Details of Above Pediment, California Capitol, Sacramento



The Second Pediment of the California Capitol
Representing California of Today
Edward Field Sanford, Sculptor

the very start, in its relation to the entire building.

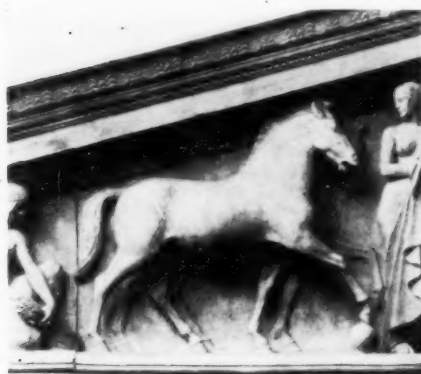
Thus Mr. Sanford, in his preliminary studies for the Sacramento pediments, modeled them at one-inch scale, in sketch form, as part of the whole building; not as an isolated project. And it is only in this way that any relationship in harmony of scale, or in harmony and design in the massing of the figures, can be achieved. Quite aside from poses, or from any symbolic meaning the figures may have, the elements of pediment design as confronting the artist are lights and shades and voids and solids. With these elements he must construct a logical design that will not only be finely balanced and coördinated in itself, but must also be finely related to the whole building. The elements of design as Mr. Sanford employed them in the Sacramento pediments were elements of weight, both physical and optical, voids and solids, and inclining lines—and always a sense of scale. Adhering to classic precedent, he utilized heroic scale for the central figures, but kept all the others in uniform scale. And as another very important consideration, he modeled the drapery of his figures to effect in them the same "color" as that of the columns below.

In the matter of weight in design there is always a nice distinction as between figures that *look* heavy and figures that *actually are* heavy. To this distinction Mr. Sanford was very sensitive, and placed all his figures directly over the spaces between the columns below. His idea here—and an excellent idea—was to give the masses of his figures the optical effect of securely resting on the sturdy architrave blocks, and at the same time to avoid the unfortunate effect that would have resulted if the figures

had been placed so that they seemed to be continuations of the columns. Such a logical system as this escapes any danger of overcrowding or of a too sparse treatment, and must come nearer to achieving that quality of "rhythm" about which so many critics have written, and which so few seem able to define.

In these two pediments, also, there is a well articulated balance between the voids and solids, and none of the feeling of overcrowding which has marred many otherwise good pediment compositions. Inclining lines in the figures at right and left of the centers lead effectively, but not too conspicuously, to the central figures, so that the compositions have movement, but an organized movement very different from mere restlessness. In his adherence to such fundamentals Mr. Sanford has proved himself not only highly observant of the merits and defects of many executed pediments, both ancient and modern, but has shown himself a lucid and logical thinker as well. While inspiration was by no means absent, his work here clearly reflects a high degree of intelligence, of analytical reasoning as the guiding light.

The subjects for the figures in classic pediments were generally taken from mythology pertaining to the temple, or from its presiding deity, and in most cases the two pediments are related to each other in the significance of the subjects chosen. From the central figure of the pediments figures of lesser importance extend to the extreme angles. In planning the subjects for the group in the two Sacramento pediments, Mr. Sanford very properly gave thought to public appeal,—a thought far too often deemed undignified by many architects and sculptors. Yet I think it is not a very debatable point, the point that



Details of Above Pediment, California Capitol, Sacramento

a work of art is more rather than less a work of art if it is keyed to the taste and interest of its own time. The subjects of the pediments, then, are California of the '49 era and California of today, treated very rightly, in classic allegory in character with the architecture. There may some day be an architecture that will assimilate realistic sculpture—but it is not yet on the horizon, and Classic architecture will go on demanding Classic sculpture as its accompaniment.

The thought paralleling the chronological symbolism of the pediments is that of the world giving to California in the days of its early settling, and of California giving to the world today. Thus, in the first pediment the central figure is that of a primitive woman, strong and rugged. Right and left of this figure are figures symbolizing the natural barriers that confronted the early settlers—the rivers and mountains. Here, too, are the pioneers themselves, oxen, and the buffalo of the plains. Near the extreme right are a mother and child, typifying the new generation, and the acute angled corner is skillfully filled by the figure of one of the pioneers, blowing a fire. By way of contrast to this more peaceful and constructive aspect of the settling of California, the left end of this pediment introduces a fighting group, the rougher element in early days.

The central figure of the second pediment, California of today, shows a cultured California, wear-

ing the helmet of Minerva, goddess of wisdom; at her left and right are two sons, statesman and warrior. In succession, leftward, extend figures symbolizing floral beauty and richness, horses, agriculture, the harvester, progress, and, in the extreme angle, a bear, the state's symbol. To the right, the warrior son bears the seal of the state, and there are figures symbolizing natural beauty,—the figure of Pegasus,—inspiration and poetry; treasures, commerce and harbors and, lastly, the mountain lion.

This, however, is the Baedeker aspect of the design of the pediments, and while it is agreeable to have the various figures mean something as related to the history of California, Mr. Sanford's real achievement should be measured, rather, in terms of architecture and sculptural design as related to architecture. He has approached the problem of the pediment with an open mind and a clear eye, giving due recognition to the classical past history of the pediment, but not allowing himself to be intimidated by it. More than this, he has approached it intelligently, basing the main premises of his composition on the architectural facts of the building in which the pediments were to be placed, and recognizing as the essentials of the composition the inescapable fundamentals of void and solid, light and shade, weight, mass, balance, rhythm, and bringing every part of the entire design into its proper relationship.



California Capitol, Sacramento
From One-Inch Scale Model

The Steinhart Aquarium, San Francisco

LEWIS P. HOBART, Architect

THE Steinhart Aquarium, located in Golden Gate Park, San Francisco, is another of those splendid monuments to private generosity with which San Francisco is adorned. It is of beautiful and dignified architecture, and was built as a unit in the group of buildings of the California Academy of Sciences. The approach to the Aquarium is through an open court, in which are five large pools, containing seals, sea lions, porpoises, giant turtles and other monsters of the deep. The three largest pools in the court have a swimming length of 80 feet.

One enters the Aquarium through a combined colonnaded vestibule and "swamp" room, which is top-lighted. The promenade around the swamp, which is on a slightly lower level, presents a tropical appearance because of the planting around the walls. In the swamp, among the plants, can be seen small alligators, turtles, lizards and harmless water snakes. The color of the walls and columns is sea green, and the wall has a tile base and wainscoting showing motifs of sea life. The floor is of red tile with inserts of tile decorated with crabs and lobsters. Neptune's horses, with maps of the oceans, are painted above the entrances to the tank rooms.

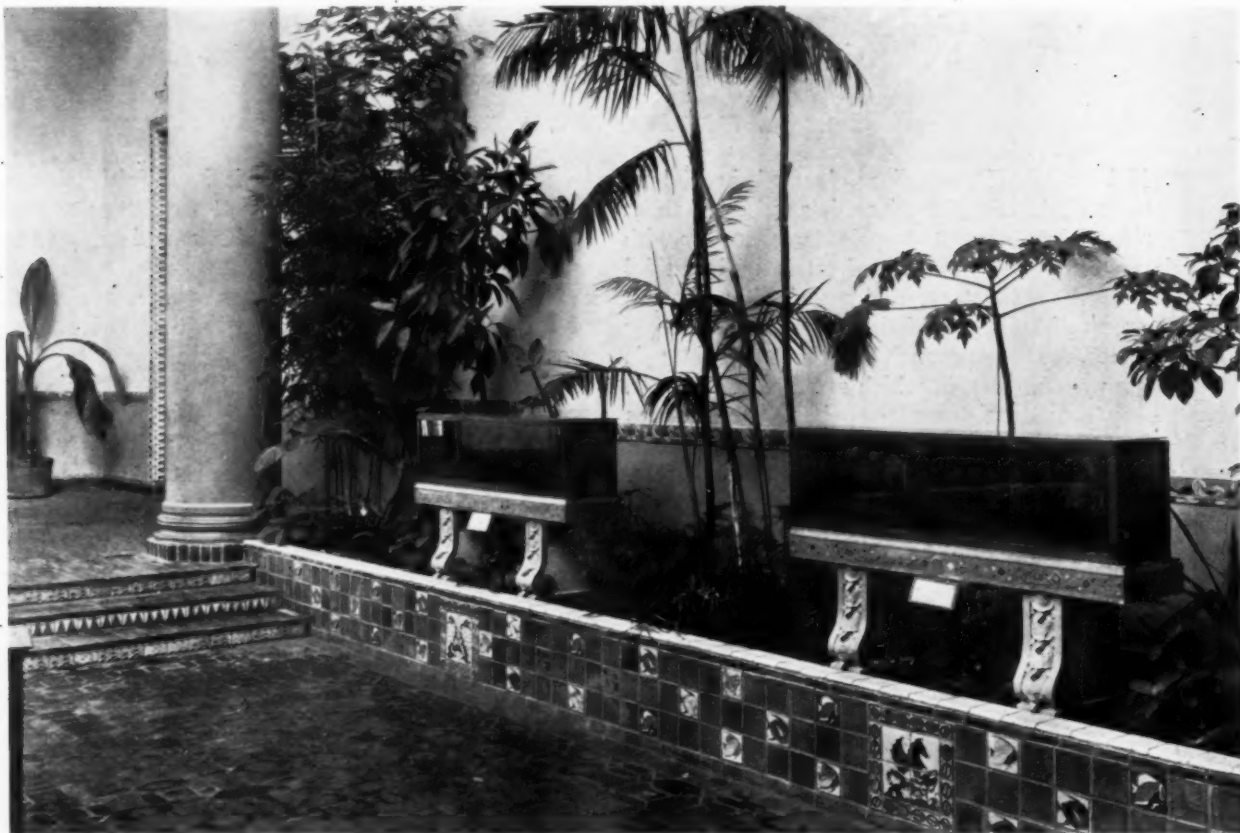
The Aquarium proper, which is a low structure arranged around three sides of the swamp room, contains the fish tanks. There are 60 large tanks, in addition to 60 small tanks and a hatchery, through which, due to an abundance of top light over them, light is diffused through the water and glass fronts

into the public space, which is kept fairly dim so that the fish show to the greatest advantage. These tanks contain fish, crabs, eels, sharks and many varieties of trout, besides other invertebrates.

For the mechanical equipment there is a supply of salt water obtained by an 8-inch pipe line direct from the Pacific Ocean, and there are salt water storage tanks of about 2,000 gallons each for emergency purposes. The hot and cold water systems are worked by automatic, electrically-driven pumps through tanks on the roof. The water for the tropical fish is kept warm, and for the cold water fish cool by a heating and refrigerating plant. The heating and refrigerating machines are controlled by thermostats. The water is circulated, returning from the fish tanks through filters to the storage tanks, and is then used again. Four separate systems of water, each of a different temperature, are maintained. Lead pipes are used throughout for the salt water system, and all plumbing is laid in open conduits to make easy repairs and control. Any tank may be shut off without in any way affecting any other tank in the circulating system. Air is introduced into the tanks by aerating the water through loosely fitted glass pipes as it enters the fish tanks. The basement of the Aquarium contains, besides the heating, refrigerating and pumping plants, a kitchen where fish food is prepared, and offices, libraries and laboratories, as well as an apartment of three rooms for occupancy of the superintendent and family.



Entrance Court, Steinhart Aquarium, San Francisco



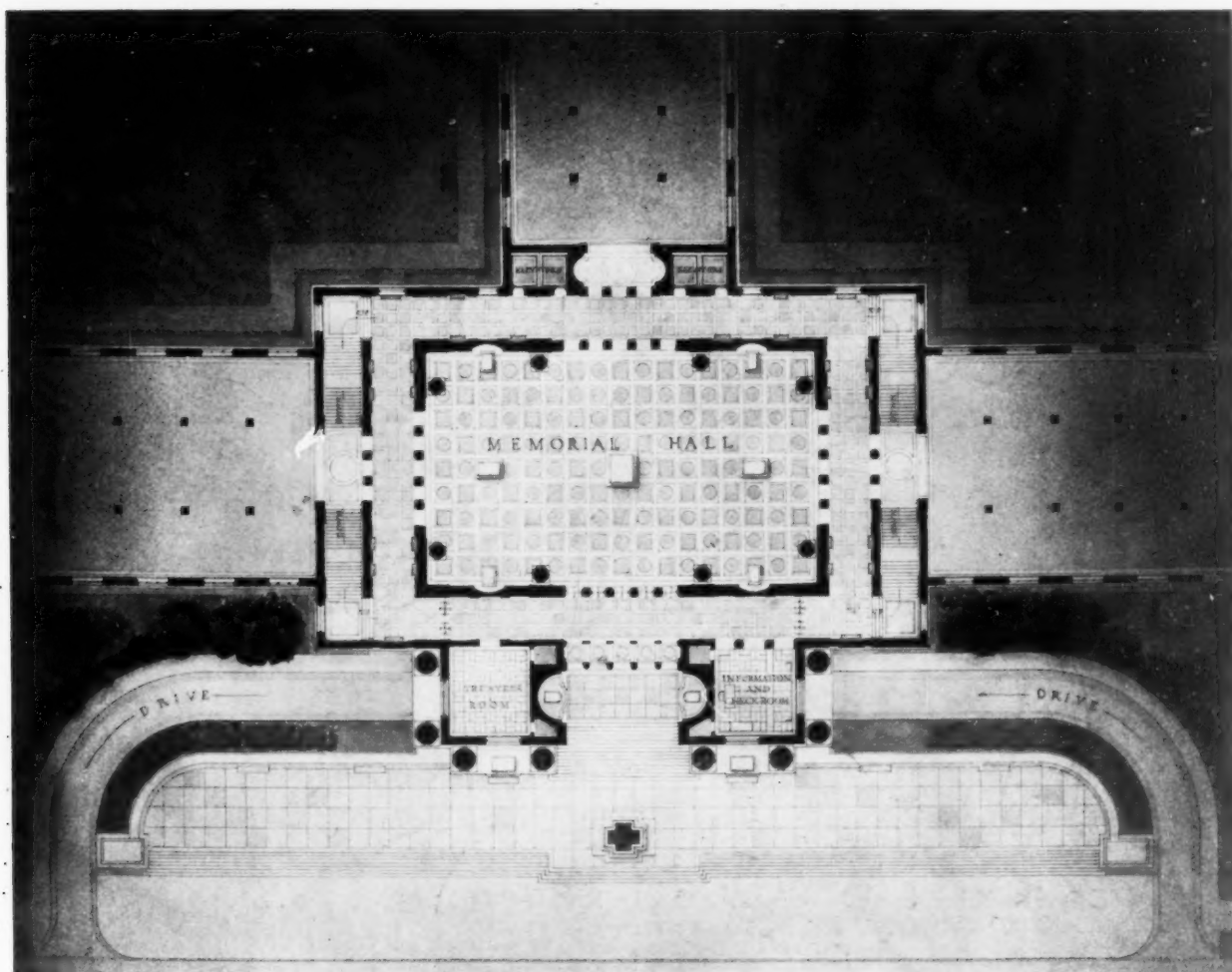
BALANCED AQUARIUMS IN SWAMP ROOM

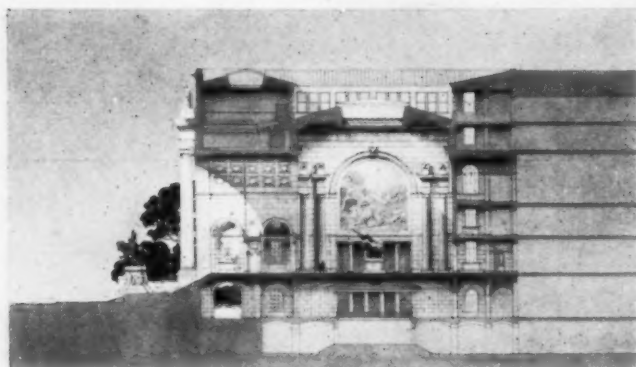


INTERIOR, STEINHART AQUARIUM, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

✓ The New York State Roosevelt Memorial Competition

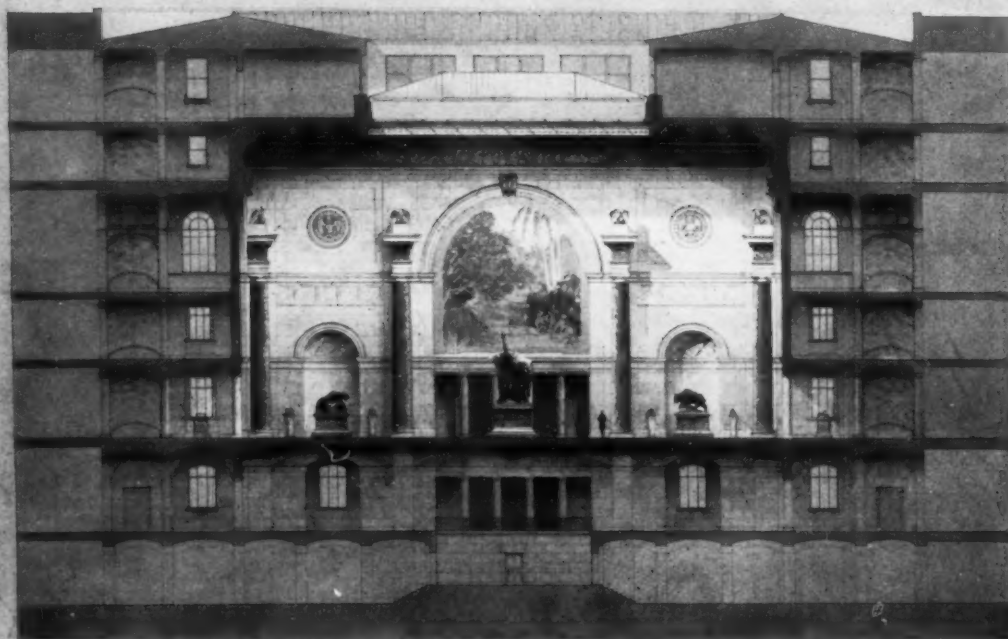
WON BY JOHN RUSSELL POPE, ARCHITECT





THE DESIGN WINNING THE COMPETITION FOR THE SELECTION OF AN ARCHITECT
NEW YORK STATE ROOSEVELT MEMORIAL

JOHN RUSSELL POPE, F.A.S.A.



THE DESIGN WINNING THE COMPETITION FOR THE SELECTION OF AN ARCHITECT
NEW YORK STATE ROOSEVELT MEMORIAL

JOHN RUSSELL POPE, F.A.S.A.

The War Memorial at Southampton, N. Y.

GOODWILLIE & MORAN, Architects

THE idea or purpose of the Southampton Memorial was to properly and fittingly commemorate the service of all those, living, as well as dead, who served their country in the World War. After various suggestions had been studied, it was agreed by the committee in charge that the memorial should properly express the appreciation of such service and sacrifice, not in the form of a clubhouse, hospital or hall, but rather in a more æsthetic form, which would significantly demonstrate the spiritual ideas of patriotism, sacrifice and gratitude, as applied to those thus commemorated.

It was then decided to locate the memorial in the park at the head of Lake Agawam, and the committee engaged A. Stewart Walker, of Walker & Gillette, to act as its professional adviser and to formulate a program for a competition and select a design. The program was prepared to meet the requirements of the American Institute of Architects, and was of what is known as the "open" type.

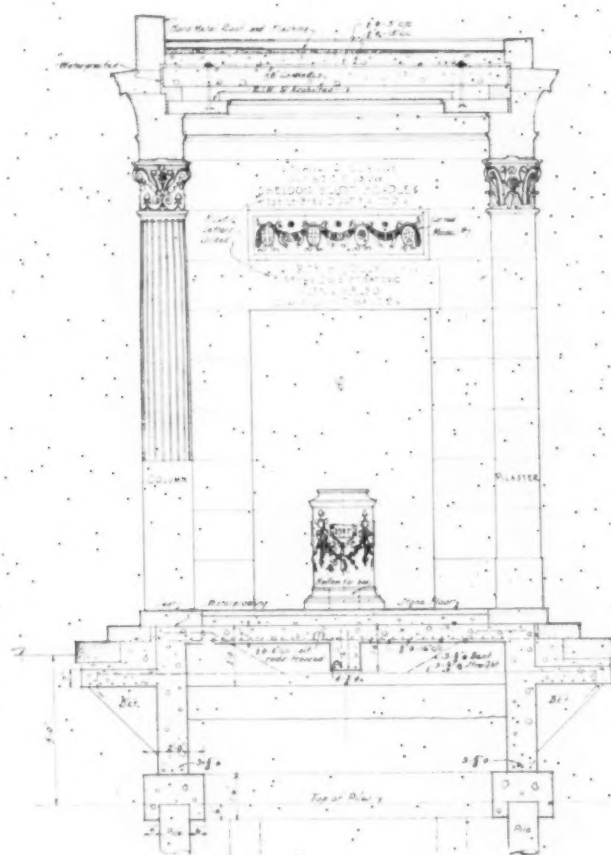
The description accompanying the winning design in the competition will give, perhaps as well as possible, the underlying thought: "In considering this problem, it appears to the designer that there exists one salient point on which a proper scheme for this site and setting must be predicated. It must have as a background Lake Agawam with its surrounding hills and distant dunes, so characteristic of Southampton. It would further appear that the proper form for the memorial design would be one on which the names of those we are to commemorate could be clearly and legibly inscribed; one which would be an integral part of the surrounding landscape, and primarily one which would not interfere with the natural beauty of the site, but which would tend to add to, or frame, this beauty. The designer therefore submits the scheme herewith, consisting of a platform slightly raised above the level of the ground, which by its contour calls for a horizontal

treatment, the central portion to be three steps, and the side portions two steps above grade. On this platform, in the center, would be erected an open temple, covered by a roof for shelter; on the interior walls of this temple would be inscribed the great victories of the war, and in the center, there would be a suitably inscribed commemorative altar of victory. To the left and right of the center it is proposed to erect extending walls, providing space whereon the names of those who served may be inscribed. It will be noted that the central portion or temple is open, and that openings have been placed in the left and right extending walls, so as to frame pictures of the lake and hills beyond. The structure is intended to be erected in limestone, with flagged terraces where open, and cut stone pavement where covered. The landscape treatment in connection with the monument will be of the simplest sort; the existing large trees in the center of the site would be made a component part of the plan, and simple planting of cedars and evergreens, with perhaps barberry or privet hedges marking the path from the highroad to the monument."

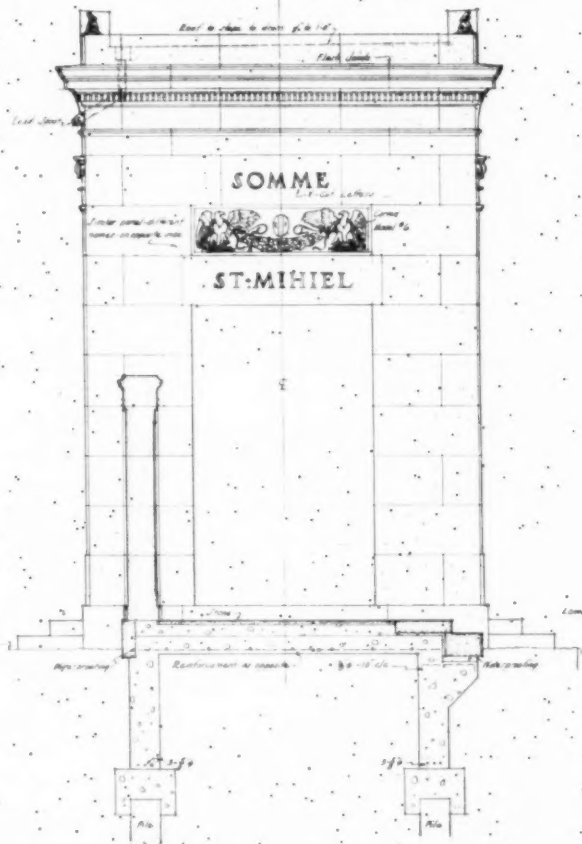
The structure is of selected Indiana limestone, with a lead roof. The modeling for the ornament was done by Paul Wiehle, from full-sized drawings made by the architects. The large exterior panels show eagles, with laurel and poppy swags encircling shields of the two great allies, France and England, and on the interior panels the shields of Belgium, Portugal, Roumania, Italy, Montenegro, Russia, Japan and Serbia appear, joined by swags of immortelles. On the interior panels, the names of those who died are carved and gilded. On the flanking walls are carved, in Classic lettering, the 325 names of all those who served. At the center of the colonnade is placed a commemorative altar, on which are carved the dates of the war and the shields of the State of New York and the United States.



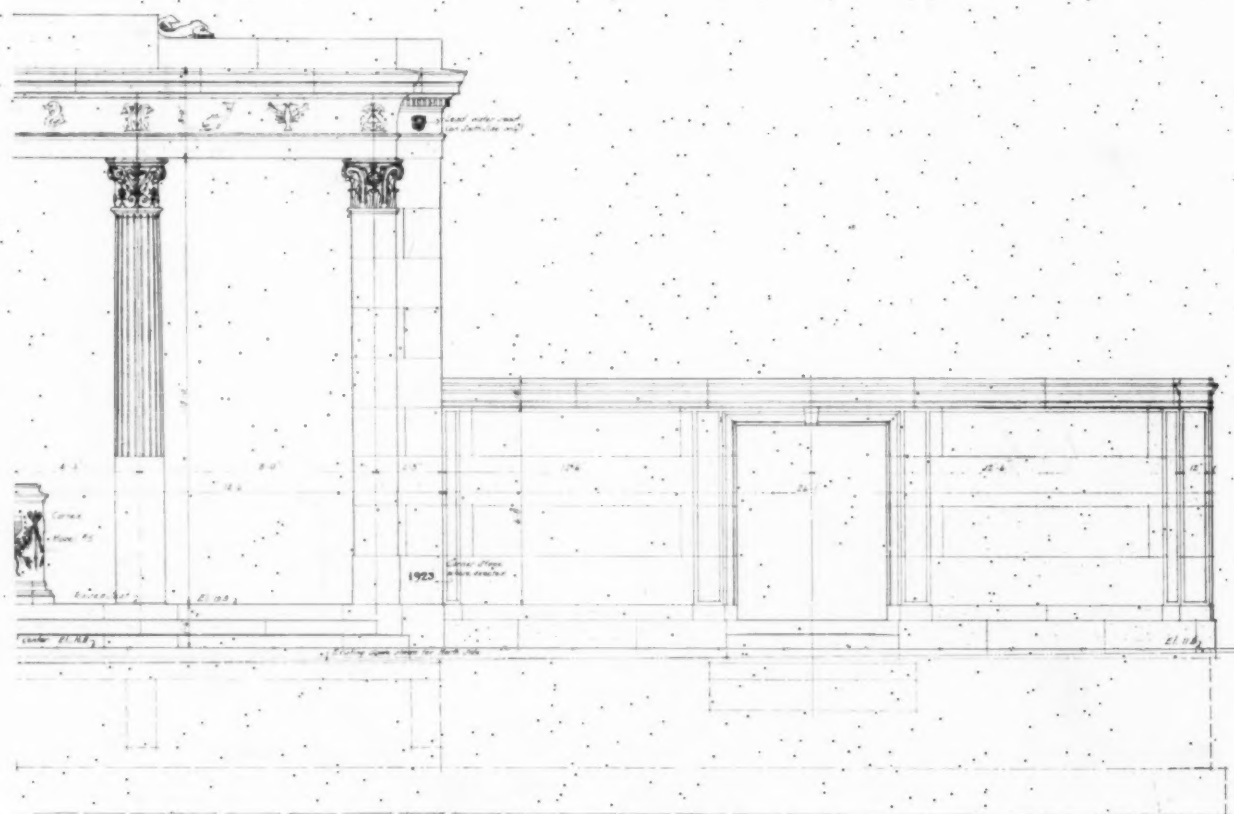
Lake Agawam Forms the Background for the Memorial



TRANSVERSE SECTION.



EAST ELEVATION



ONE-HALF FRONT ELEVATION
WAR MEMORIAL, SOUTHAMPTON, N. Y.
GOODWILLIE & MORAN, ARCHITECTS

The Guild Theater, New York

C. HOWARD CRANE, KENNETH FRANZHEIM, AND CHARLES HUNTER BETTIS, Architects

THE recent completion of the theater for the Theater Guild in New York marks the culmination of seven years of hard and successful work on the part of this interesting and unique organization. To secure a beautiful and permanent home for its work was an almost un hoped-for achievement, and all who have been so privileged as to contribute to or take part in its activities should be justly proud of its accomplishment. One has only to recall the most successful theatrical productions of the past few years in New York to realize how great has been the achievement of the Theater Guild. At least three of the most popular plays of each season have been among the several selected, conscientiously studied and successfully produced by this organization. So it is not surprising that the idea with which the original Guild group began its experimental career has been enthusiastically supported by an ever-growing host of patrons, or that the organization has grown to proportions quite beyond the most optimistic dreams of its founders.

When the new Guild Theater in West Fifty-second Street formally opened its doors with a colorful

and convincing production of George Bernard Shaw's clever satire, "Cæsar and Cleopatra," the enthusiastic audience was profoundly impressed by the rugged and refined detail of the beautiful Italian interior. The theater is entered through a spacious lobby with groin vaulted ceiling and travertine walls, with details such as doors, ticket windows and radiator grilles skillfully carried out in the Italian style. From the entrance lobby, three steps lead down to the large upper lounge, at the right of which broad steps lead through an open arch to a wide landing from which stairways ascend on either side to the floor of the orchestra immediately above. On the left side of the upper lounge or main foyer, through an open arcade leading down three steps, the lower lounge is reached. This is furnished in homelike fashion with comfortable couches and easy chairs, long tables and lamps in the Italian style, grouped conveniently and attractively around a great fireplace at the middle of the outside wall. At one end of this comfortable lounge a small refreshment booth is seen through three low arches, while on the opposite wall an Italian doorway gives access to a retir-

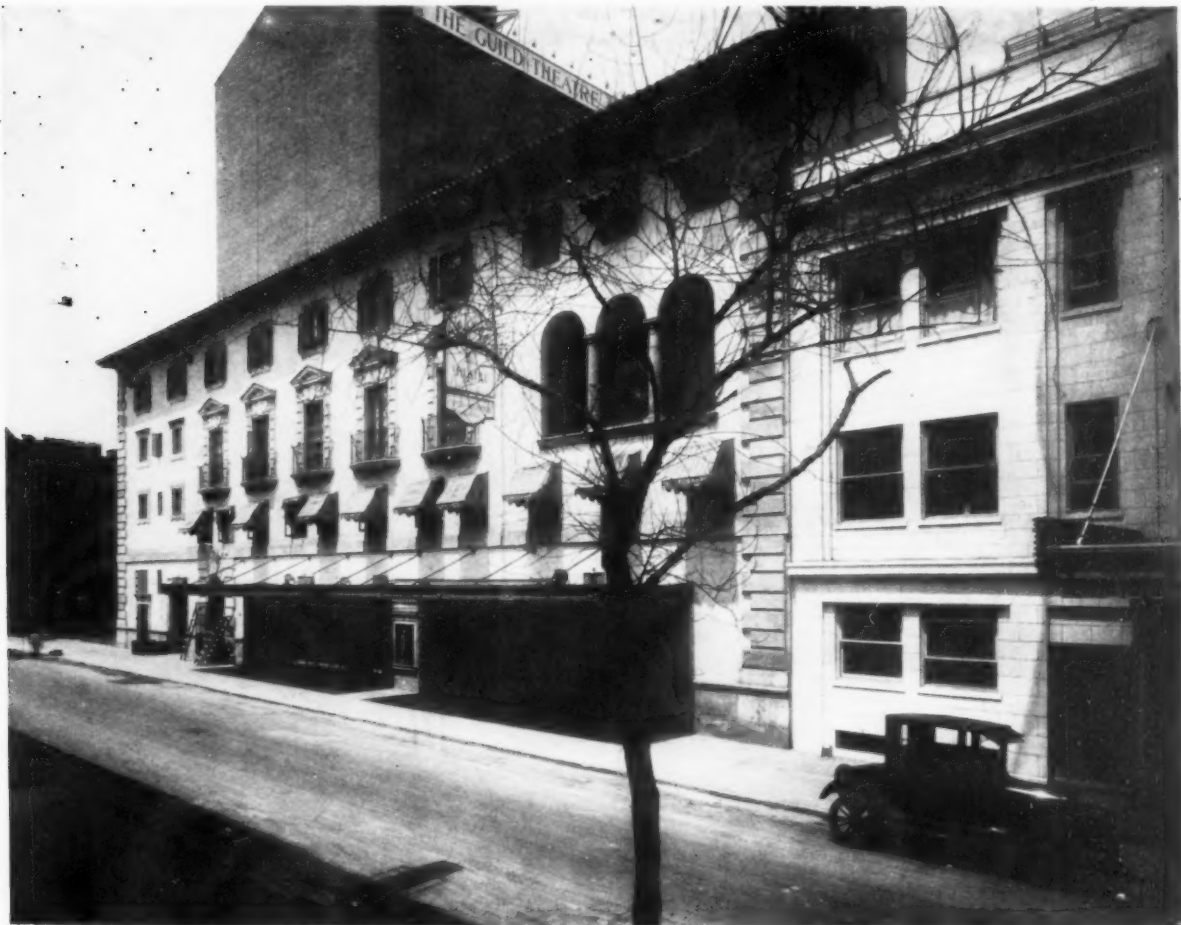


Photo. John Wallace Gillies

Front Facade, The Guild Theater, New York



Detail, Upper or Entrance Lounge



Detail, Wall Niche and Antique Credenza

ing room for women. The walls of this rest room are colorful in tones of Italian blue, elaborately frescoed with an all-over pattern in typical Italian style. This rest room is also comfortably furnished with chairs, tables and lamps of appropriate design. Richly paneled walnut doors conceal the toilet rooms beyond. In similar fashion, at the end of the upper



Window Detail, Upper Stair Hall

lounge or foyer, opposite the entrance doors, a single monumental doorway leads to a men's smoking room. This men's room also shows colorful wall decorations in all-over pattern of red, green and blue. Here again the carpets and furnishings are rich and harmonious in color and style. At the right of the entrance to the upper lounge is an ample coat room, the walls of which are painted in a rich Pompeian blue; the door shows an interesting Spanish baluster treatment. In contrast to the neutral color of the glazed antique plaster walls, a richly colored carpet of Italian design is used to cover the floors of both upper and lower lounges. The wall fixtures, which are made from frames of antique Italian "cantaglorias" or altar cards in dull gold or polychrome, in which the illuminated or printed text has been replaced by mirrors, also give a note of added color and interest. A small bookshop in one corner of the upper lounge is another convenient and engaging detail. The ceiling of the upper lounge is a low barrel vault, covered with rough plaster.

Ascending the stairway through an interesting Italian stair hall with recessed window and seats at one end, the orchestra floor is reached. Large doors in the Italian style at either end of the stair hall lead directly to the side aisles and rear of the auditorium. In the interior of the auditorium the style of the Italian Renaissance is again expressed in a very successful and dignified manner. Rough plaster walls, tinted and glazed down to a golden hue, are relieved by door trim and columns of travertine. The side walls of the theater curve gracefully to the stage, where the usual proscenium arch with its heavy



Detail, Stairway Corridor



Detail, Main Stairway

mouldings and decorations is happily omitted, producing an effect of unusually close and intimate connection between the audience and the actors. This effect is still further heightened by the omission of an orchestra pit for musicians, and by dropping the level of the stage itself a foot lower than is customary. This latter innovation makes it possible for the occupants of the first row of seats in the orchestra to observe the play without any discomfort to the muscles of the neck. Above the rough plaster walls, modillion cornices in the Italian style support a deep, painted frieze just below the ceiling, the work of Victor White assisted by Margaret White and Stanley Rowland. This frieze is decorated with interesting portraits in subdued colors of characters taken from the many successful plays of the Theater Guild, and of people prominently connected with its administration and with the design and construction of the theater. This frieze is broken at intervals by massive corbels of plaster, painted to imitate walnut, which apparently support the massive beams of the ceiling, which in reality are steel girders covered with plaster and painted to imitate walnut. Small transverse beams occupy the ceiling spaces between the heavy constructional beams. All are painted to imitate walnut and decorated in color and gold after the Italian fashion, which further adds to the richness and depth of the color effect of the auditorium. This richness is still further aided by the use of fireproofed walnut for the wainscoting at the rear of the auditorium under the balcony and for the various exit and entrance doors. Five entrance doors, three of which

are arches, open on the south side of the theater directly into a separate enclosed stairway which leads down a few steps to exits, opening on Fifty-second Street, while the exits on the north of the theater open onto a large rear court, thus giving ample egress.

The floor of the auditorium is covered with a figured carpet in red and brown, and the seats are

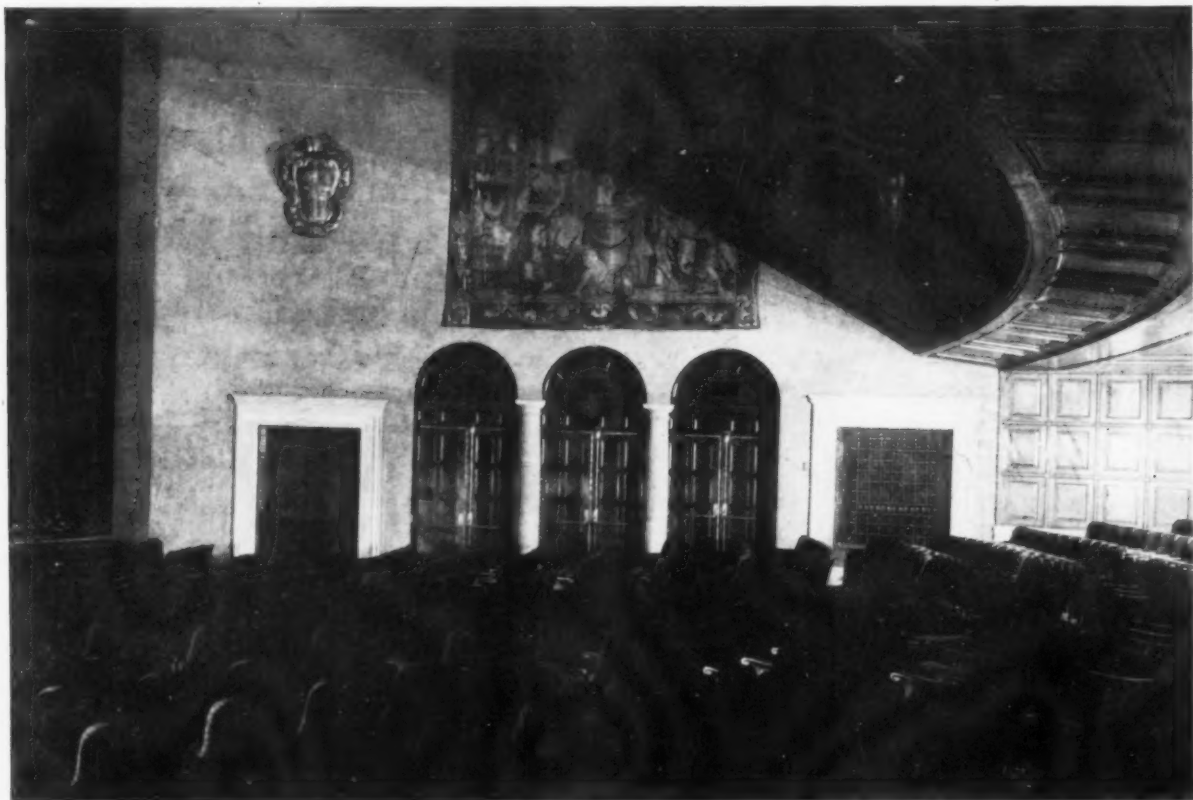


One Turning of the Stairs

upholstered in tapestry of brown and gold, with touches of red. Large antique tapestries of allegorical design provide the necessary decorative treatment to break the long expanse of the side walls. Above the orchestra, well to the rear, a deep balcony extends back over the main stair hall. Wrought iron railings protect the stairs and cross aisles of this balcony, which is supplied with individual exits and stairways leading to the street. At one side of the orchestra, is located an attractive, long, narrow room, overlooking Fifty-second Street. This room, with its Italian fireplace, and five tall casement windows opening onto iron-railed balconies, is furnished most attractively in Italian style with couches, easy chairs, tables, bookcases, lamps and antique cabinets for the use of the members of the Theater Guild as a club room and library. A kitchenette and serving pantry connect with this club room for use when receptions and entertainments are given by the members. Above and below this attractive club room are floors and mezzanine, divided into rooms for the use of the various officers, departments and the Guild School of Acting. Above the auditorium itself, on the roof of the theater building, are located a number of rooms or studios to be used for rehearsals, scenery painting, costume designing, sewing and repair work and wardrobe storage. The stage itself is probably the most perfectly designed and equipped in this country. It has a cyclorama which is 65 feet high and which clears the stage by 24 feet when raised into the gridiron tower, or upper part of the

stage. A switchboard, operated by a single master switch, controls 156 dimmer plates and 200 switches. Twelve spotlights in the auditorium are also controlled from this same switchboard. The footlights can be lowered so as to be out of sight when not in use. The entire stage is completely trapped, so that anything in the way of stage mechanism can be accomplished. The settings are hung and shifted by a counterweight system, worked from the stage. This system and the size of the stage tower, which is nearly 90 feet in height, and the height of the gridiron, allow scenery for several productions to be housed at one time, and used when required.

The exterior design of the building is in entire keeping with the interior, showing as it does a simple street facade in the style of the Florentine Renaissance. The window openings are carefully studied and picturesquely grouped in an informal manner to give quaintness and charm to the exterior design. An open arcaded loggia pleasantly breaks the wall at one end of the facade, producing a recess of deep shadow which in a way balances the shadows produced by the entrance doors themselves and the long projecting marquee. The exterior of the "gridiron," usually of distressing ugliness, has here been made a detail of architectural dignity. The entrance door to the stair hall with an elevator, leading to the office and school of the Guild, shows a dignified Florentine architectural treatment suggesting a guild house in Italy, where the guilds flourished during the glorious and invigorating days of the Renaissance.

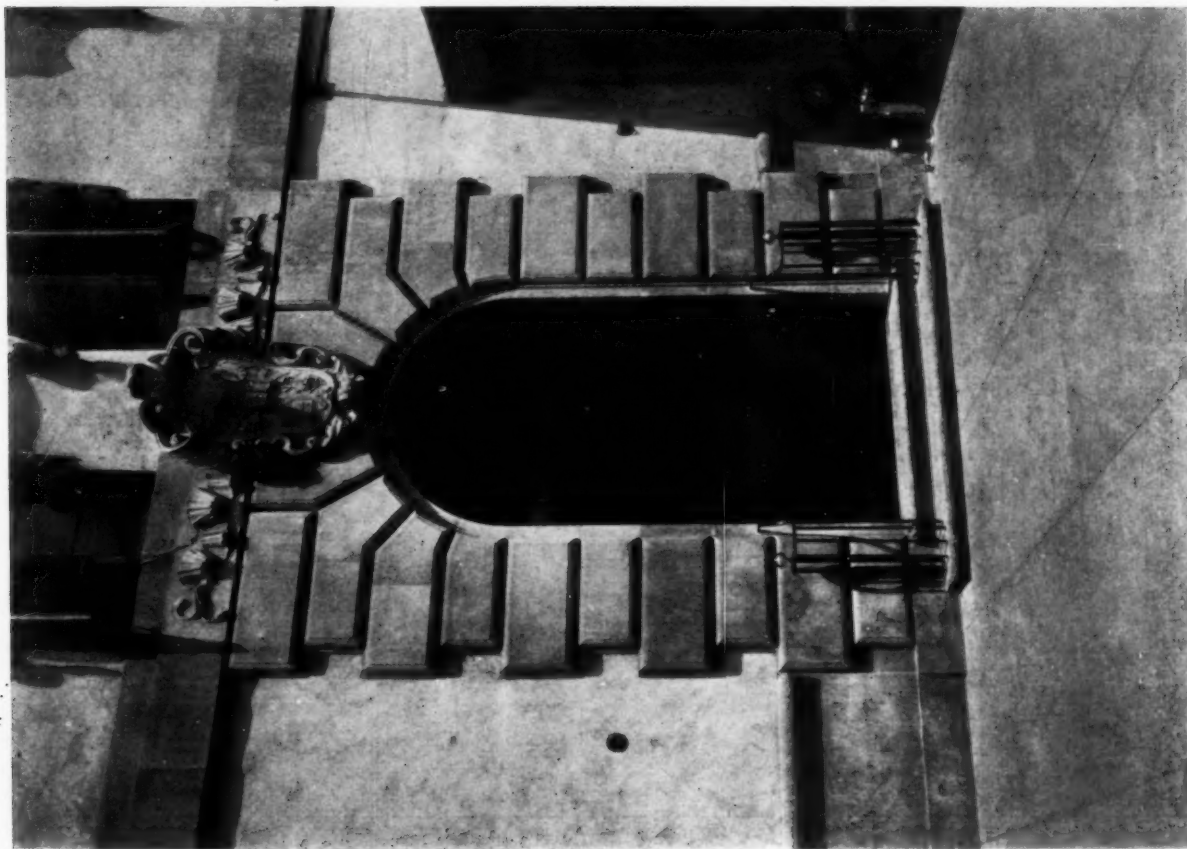


Auditorium, Guild Theater, New York

C. Howard Crane, Kenneth Franzheim and Charles Hunter Bettis, Architects

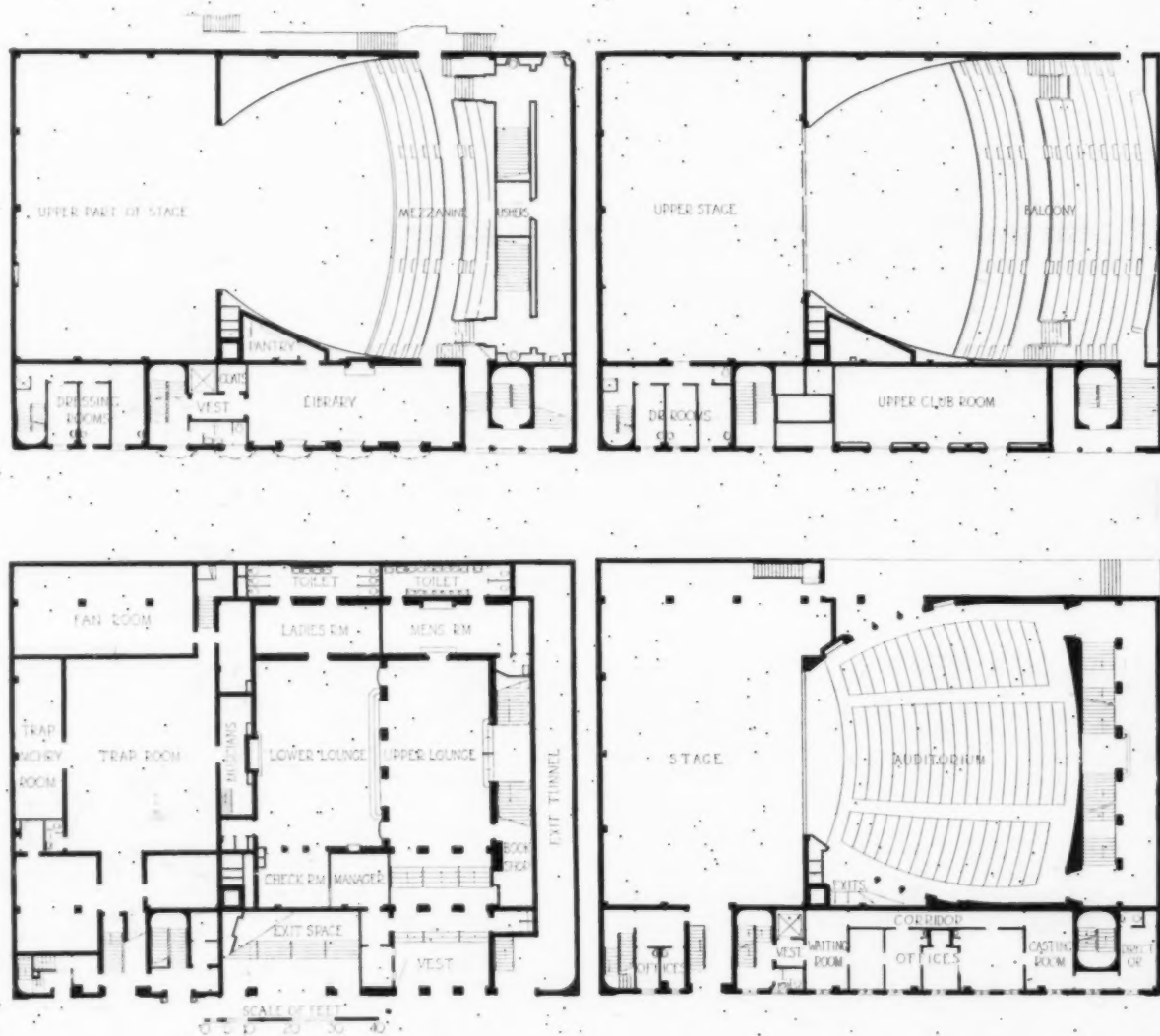


(Plates on Back)



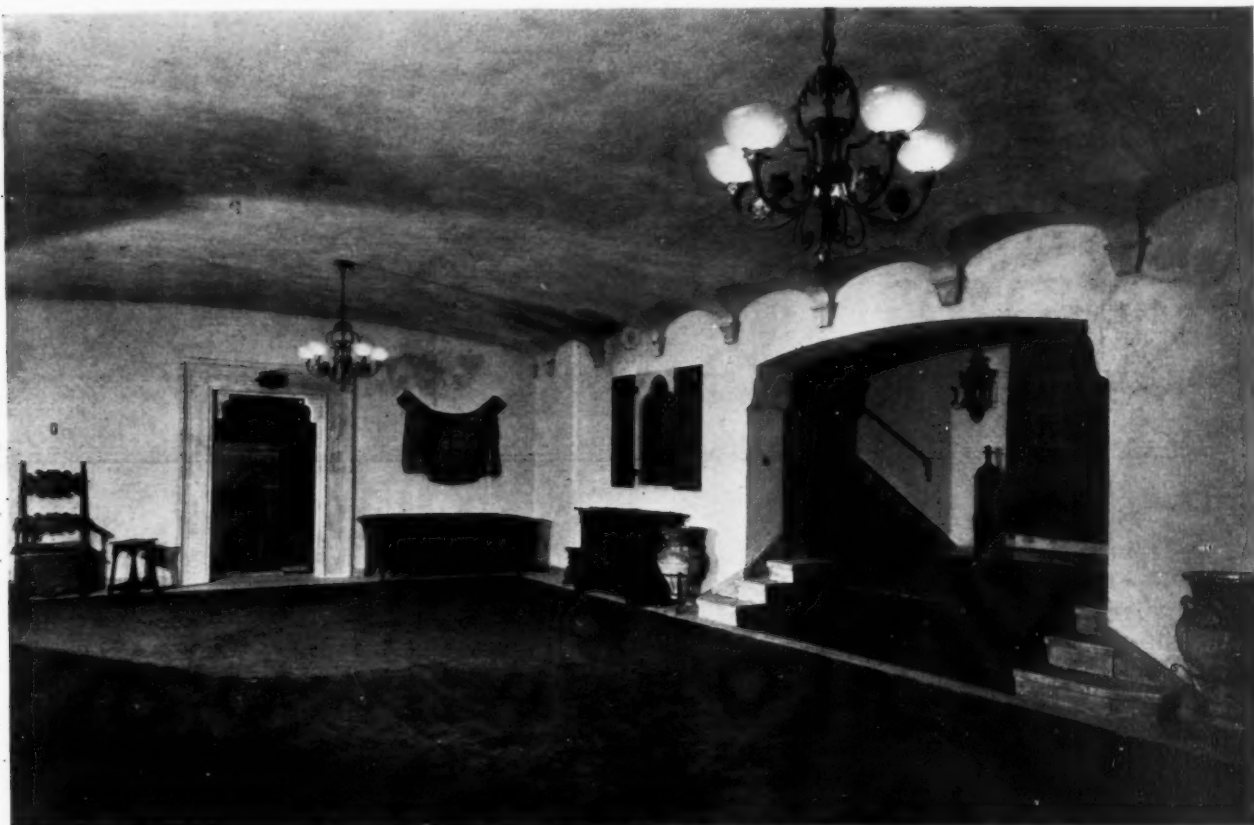
Photos. John Wallace Gillies

THE GUILD THEATER, NEW YORK
C. HOWARD CRANE, KENNETH FRANZHEIM, AND CHARLES HUNTER BETTIS, ARCHITECTS



PLANS, THE GUILD THEATER, NEW YORK

C. HOWARD CRANE, KENNETH FRANZHEIM, AND CHARLES HUNTER BETTIS, ARCHITECTS



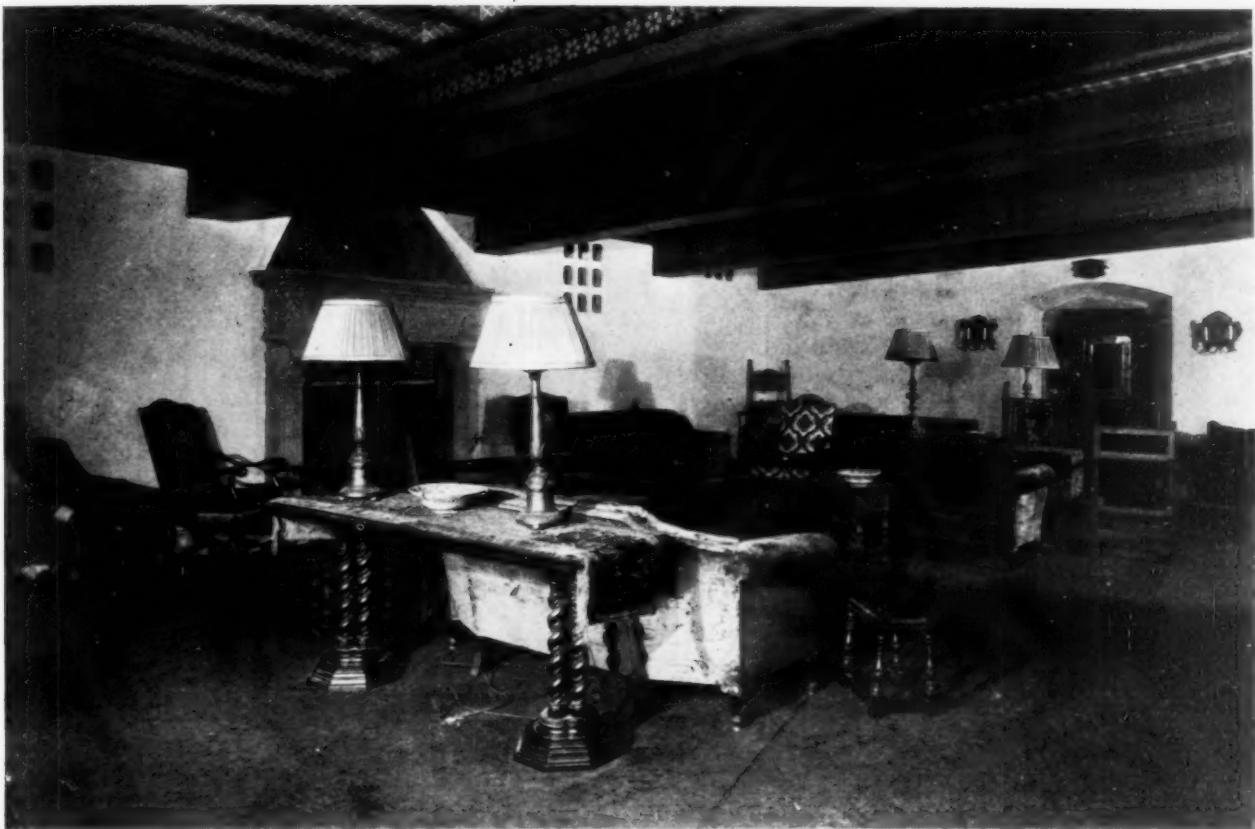
THE MAIN STAIRWAY LEADS OUT OF THE UPPER LOUNGE



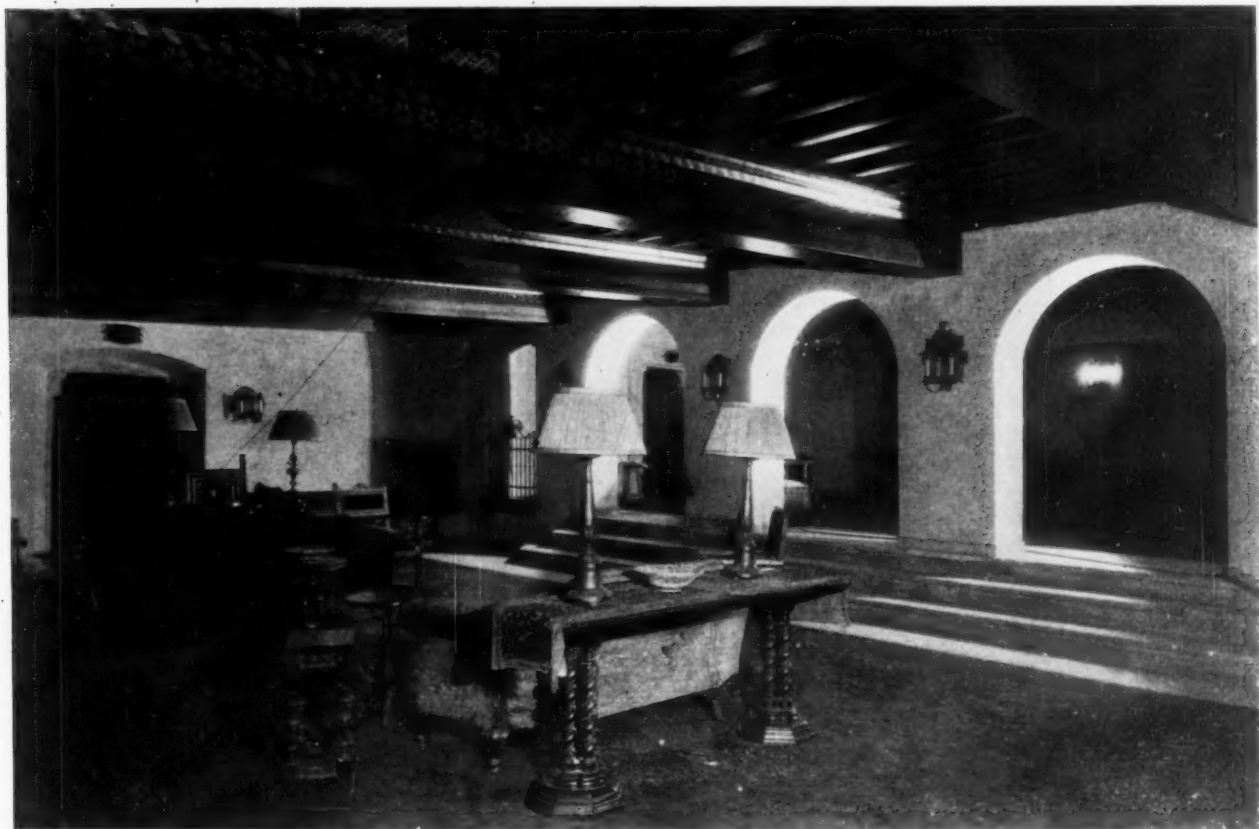
ENTRANCE LOBBY SHOWING DOORS AND TICKET WINDOWS
THE GUILD THEATER, NEW YORK

C. HOWARD CRANE, KENNETH FRANZHEIM, AND CHARLES HUNTER BETTIS, ARCHITECTS

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FURNISHING OF LOWER LOUNGE, HOMELIKE AND APPROPRIATE IN CHARACTER

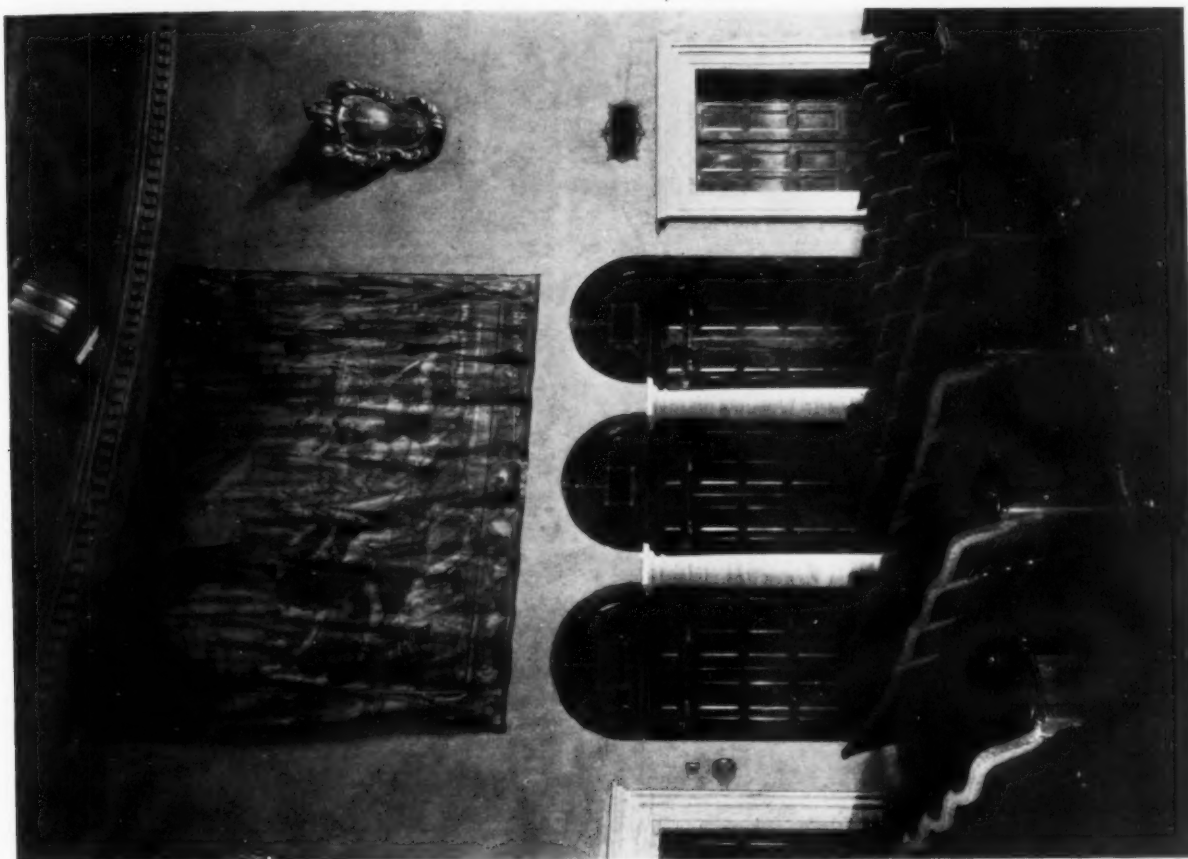


LOW STEPS LEAD THROUGH ARCHES FROM LOWER TO UPPER LOUNGE

THE GUILD THEATER, NEW YORK

C. HOWARD CRANE, KENNETH FRANZHEIM, AND CHARLES HUNTER BETTIS, ARCHITECTS

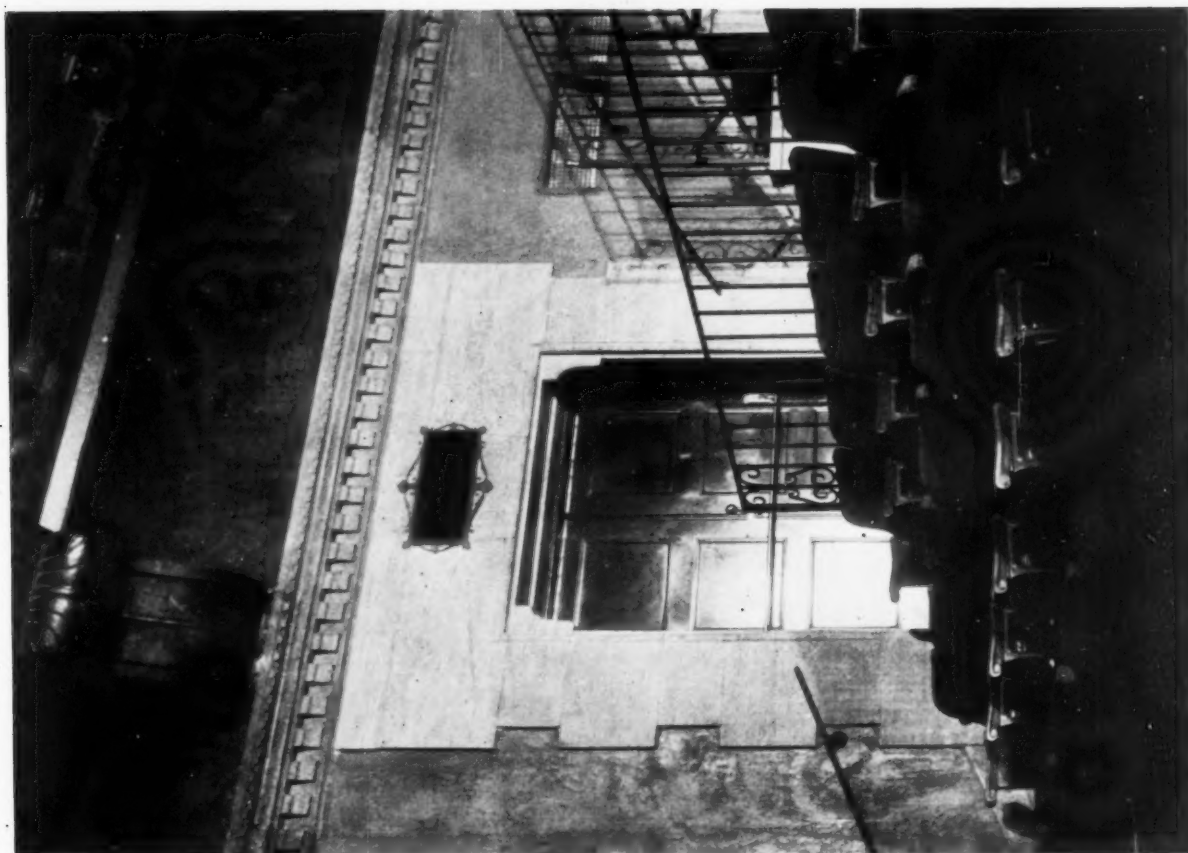
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DOORS LEADING TO STREET EXITS.

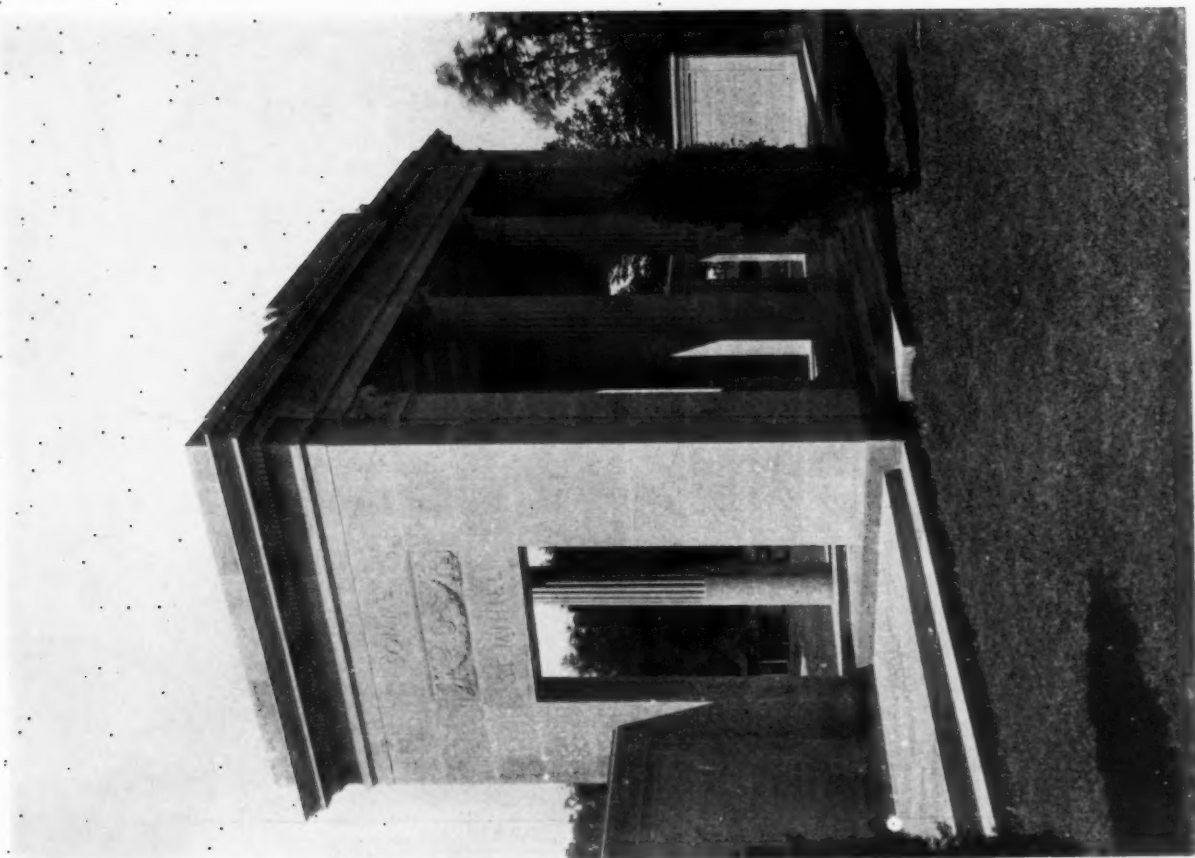
THE GUILD THEATER, NEW YORK

C. HOWARD CRANE, KENNETH FRANZHEIM, AND CHARLES HUNTER BETTIS, ARCHITECTS.



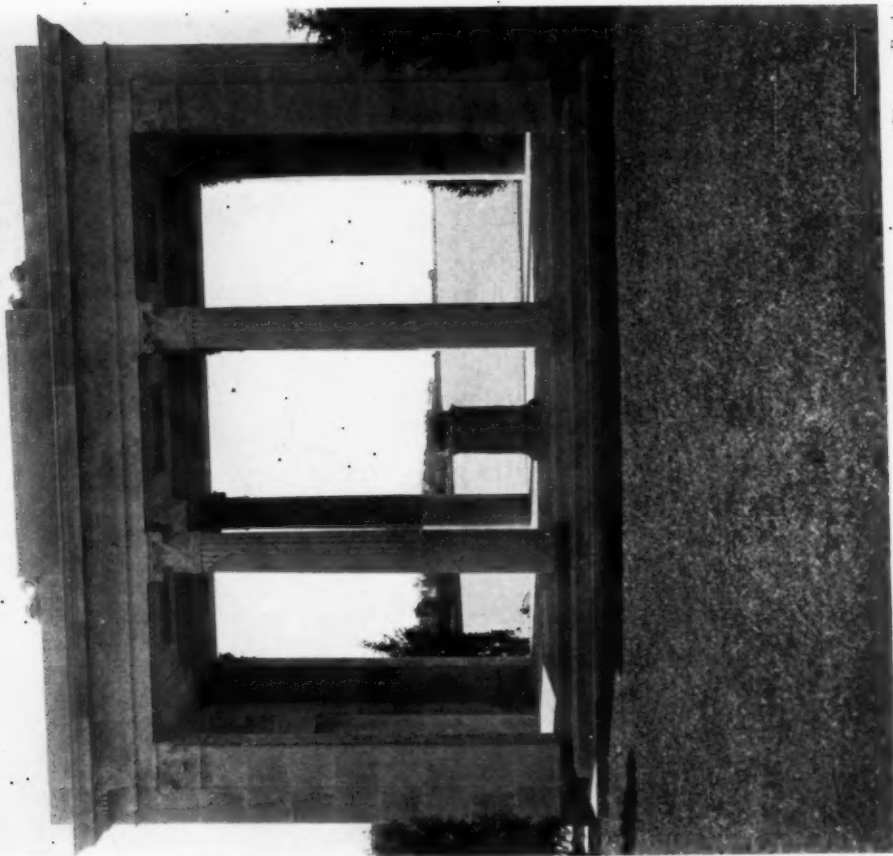
DETAIL OF A BALCONY EXIT

Architectural
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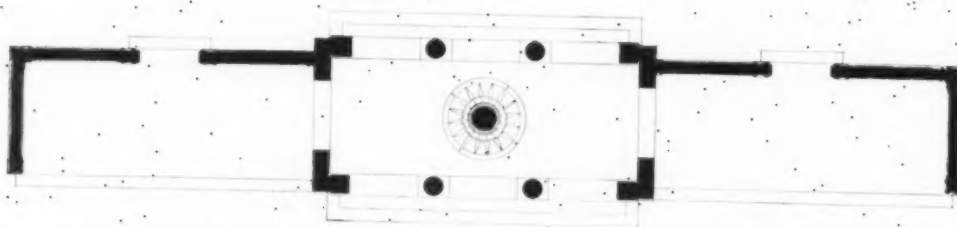


Photos, Dixey Duxey

✓ WAR MEMORIAL, SOUTHAMPTON, N. Y.
GOODWILLIE & MORAN, ARCHITECTS

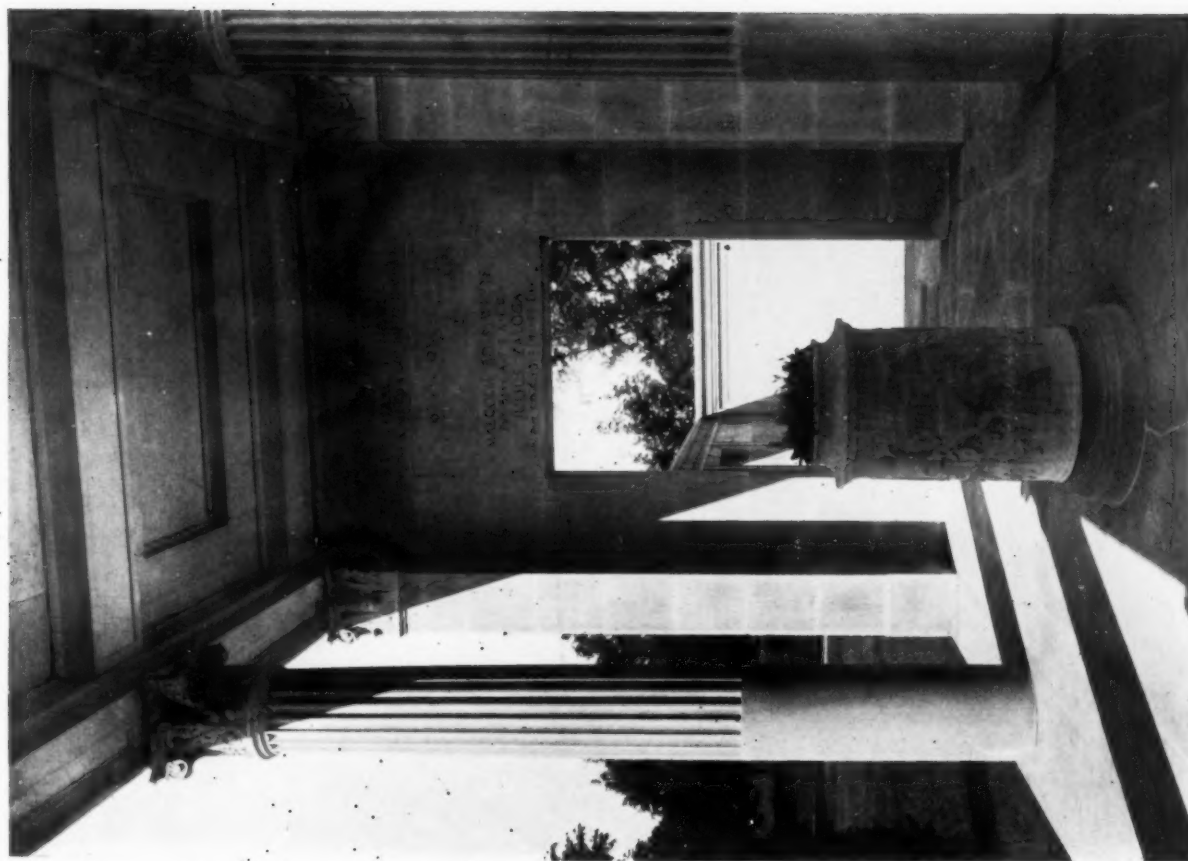
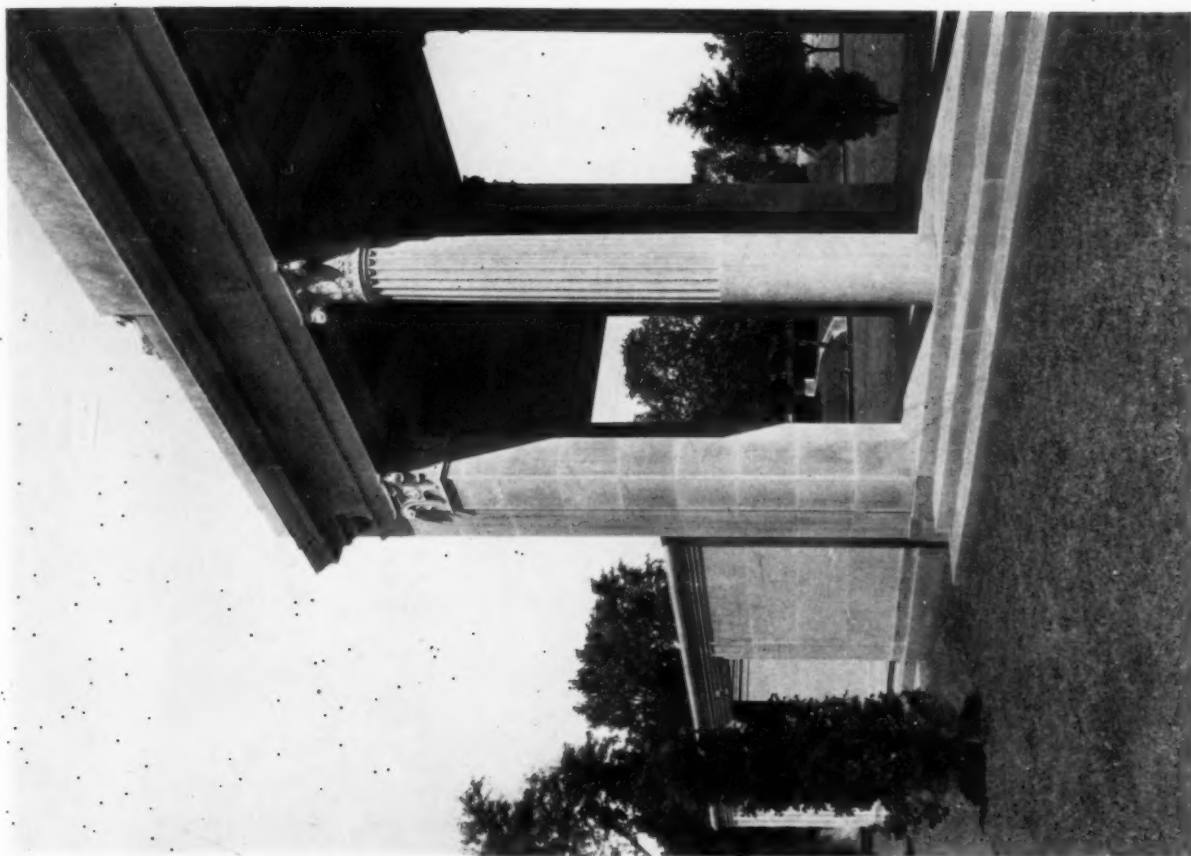


(Plan on Back)



PLAN, WAR MEMORIAL, SOUTHAMPTON, N. Y.

GOODWILLIE & MORAN, ARCHITECTS



DETAILS, WAR MEMORIAL, SOUTHAMPTON, N. Y.
GOODWILLIE & MORAN, ARCHITECTS

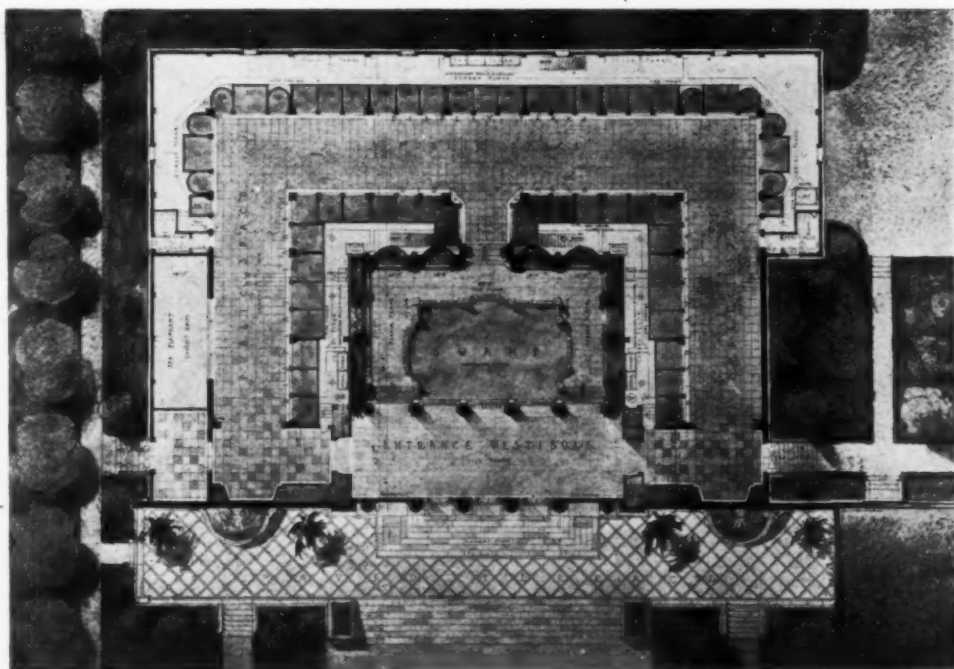
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(Plan on Back)

THE STEINHART AQUARIUM, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

Photos. Pacific Photo & Art Co.

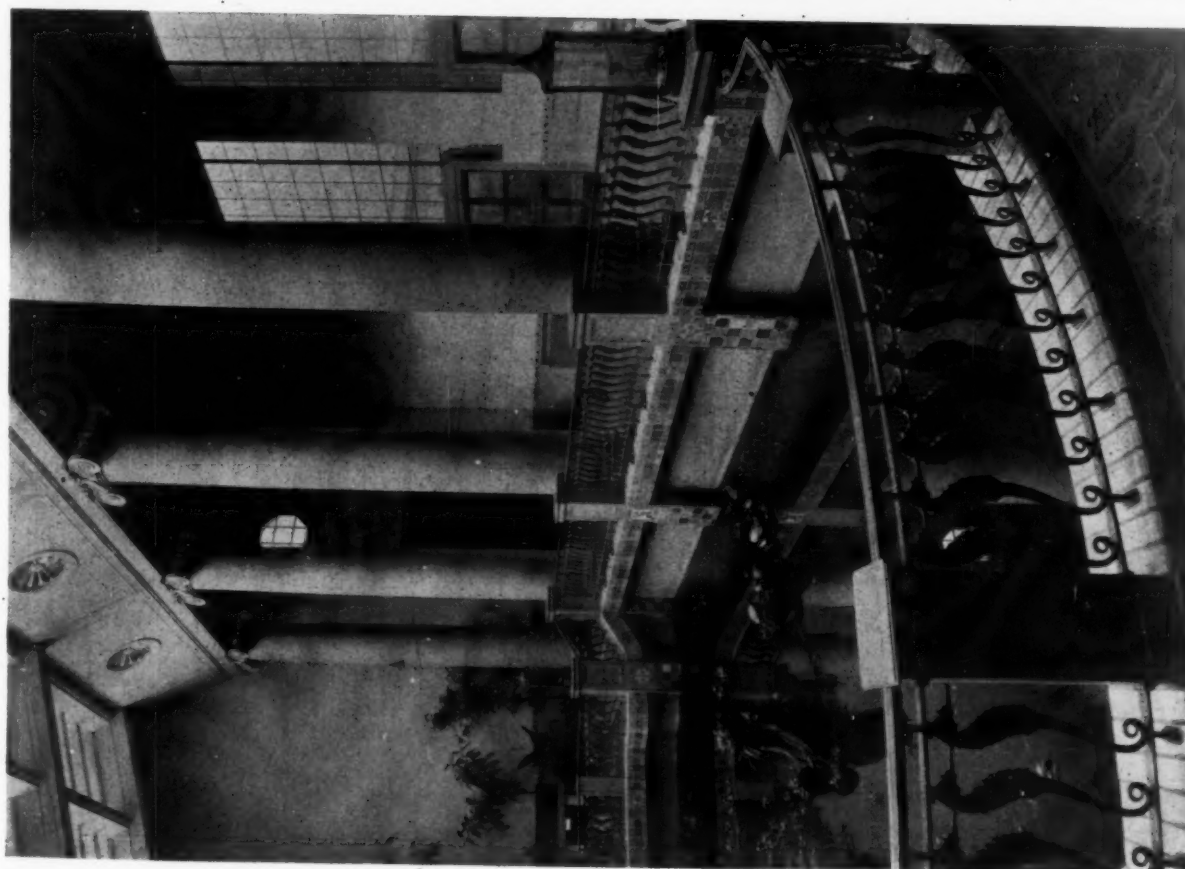


PLAN, THE STEINHART AQUARIUM, SAN FRANCISCO.

LEWIS P. HOBART, ARCHITECT.



ENTRANCE VESTIBULE



THE "SWAMP" ROOM

THE STEINHART AQUARIUM, SAN FRANCISCO
LEWIS, P. HOBART, ARCHITECT

Architectural
Library

Planting in Relation to Architecture

By ELSA REHMANN, Landscape Architect

WHEN an architect friend of mine expressed the opinion that a house could be "made" by the planting against and around it, he was emphasizing a general truth. As he had no knowledge of plants, and took no horticultural interest in them, I realized that the statement came from a real appreciation, unconscious though it no doubt was, that planting has a very direct bearing upon the impressions we get of buildings.

It is impossible, to be sure, for the architect to have a working knowledge of plants in their infinite variety. How is he to know the forms and structures, the foliage shapes and textures, the flower colors and fruiting effects of countless trees and shrubs, vines and flowers? It is a pity, however, that the architect's knowledge is usually limited to such definite forms as the columnar poplar, the pyramidal cedar and to the more artificial clipped evergreens, when there are such hosts of fascinating plant forms of picturesque beauty. This fact was very forcibly impressed upon me some years ago when I marveled at the Japanese effect of one of the *retinospora*, for, accustomed to its clipped aspect

demanding at the time by many architects, I had never before seen it in its natural form. It might be interesting and worth while for the architect to be conscious of the decorative and "sculptural" qualities of plants and of their value in making a setting for his buildings. This is a matter of line, form and color, and appreciation of it should not be difficult for an architect who values the subtlety of roof lines and window groupings, of column proportions and cornice mouldings, and other similar niceties.

The problem of the landscape architect begins at the very house walls and extends to the boundaries of the property; even farther, at times, since the setting of woods and fields, of hills and valleys, of streams and lakes may afford interesting contributions. In all this work, the house is the nucleus about which he builds. Take the planting against the house walls. This involves a problem that is really more difficult than most people suppose, because few realize that planting against the house walls does not exist for its own sake but is only good if it is adapted to the material of the house and if it can adjust itself to window groups and wall spaces. There is a certain nicety in establishing the



Shrubs and Vines Soften Architectural Lines and Contrast Well with Wall Materials

Griffin & Wynkoop, Architects



The Restraint and Dignity of the Planting Are in Harmony with the Formal Design of This House.
Griffin & Wynkoop, Architects

proper relations between the house and its planting. There is a definite rhythm to be sought in the undulating lines of foliage as it dips to the ground under windows and rises to tree heights at blank wall spaces. There is a certain refinement in the regard that planting can have for symmetrical facades, just as there is a certain freedom desirable for the planting against those which are unsymmetrical.

Not long ago I had the opportunity of making planting plans for eight houses that were being built on the same street, all within a block or two of one another. It was particularly interesting, since it brought together all the various problems that can confront one in such planting. To frame an important window group with cedars; to bring out the beauty of gray stone walls by the glossy green of swamp magnolias; to emphasize a bay with spreading yews; to frame a Colonial doorway with lilacs; to take advantage of an unsymmetrical facade by balancing a columnar cedar with a horizontally spreading dogwood,—these are only a few details to show the intricacy of such a delightful task.

Planting against a house wall can be more than a decorative asset. It can be of real structural importance. There are ways in which planting can give a doorway its rightful emphasis. There are ways in which planting can pick out and emphasize a gable end or subordinate an auxiliary wing. The heavy planting used so frequently to hide kitchens or service wings has so often puzzled me. This is likely to outweigh the rest of the planting. By its

very bulk it is likely to draw attention to that which it is supposed to conceal. It has always been a question in my mind whether the architect is at fault in giving less attention to the attractiveness of such wings or whether the landscape architect is at fault in trying to hide an obvious and necessary part of a building. In the most successful instances, however, the planting is so carefully arranged that the attention is centered on the main part of the building, and the planting about the wings places them in their proper subordination.

When rightly considered the house is always of paramount importance, and the planting adapts itself to it. Although this might seem to be absolutely obvious, there are many evidences to the contrary. How is one to forgive the planting that has so little regard for the importance of windows that it carelessly blindfolds them, as though windows were not an architectural asset of houses as well as a source of light to rooms? How is one to overlook the planting that, like a heterogeneous collection of evergreens, can set a calm and dignified house into a quiver of restlessness? How is one to forgive the overzealousness of planting that extends itself in copious abundance around a house, when a few shrubs might supply sufficient decoration? Curiously enough, even the ungainly houses of two or three decades ago, the houses whose high cellar walls were hidden beneath wide porches and behind trellises, resent this overdose of planting. I had to solve such a problem a few years ago, and I found that a sufficient use of vines to make an inconspicuous



The Vines on This House Soften Its Lines and Tie It in with the Adjacent Garden

Peabody, Wilson & Brown, Architects

green tracery against the trellis, to blur the balustrades and to wreath the banisters, put the house into the friendliest agreement with the setting.

Vines form an interesting department of vegetation. Few realize, I suppose, what a rich assortment of vines there is for the decoration of house walls: There are vines that seem particularly adapted to every structural requirement. There are vines to cover brick foundations, to tumble over porch walls, to twine around porch columns. There are vines to decorate the copings of steps, to clamber up chimneys, to cling to rough wall surfaces, and others to climb over the very roof itself. There is little fear that there will be an over-use of vines, but it is unfortunate that sometimes vines should be permitted to stray into forbidden places, to cover an entire window, perhaps, or to conceal the roof of an entrance porch to the real detriment, if not the ruin, of its architectural significance.

There is something rather subtle about this problem of planting against house walls, because the planting should interpret the character of the house. The very traditions of the house, let us say its historical background, come into play. The contrast between the rather austere Colonial and the quaint English cottage may illustrate the point; the one is rather shy of planting against its white painted clapboards, while the other welcomes quite happily the shrubs and flowers that grow close against its stone walls and clamber up its chimney and over its roof.

What we might call the "social" aspect of the house has a bearing upon the planting against it.

The farmhouse, with old fashioned roses, peonies and chrysanthemums in careless tangles against the walls, is as happy in its way as the brick mansion appropriately framed in expensive and carefully placed box and holly, cedar and hemlock. There is something about any house, about its roof lines, about what we might call its bulk, about its very style, that should influence the planting against it. Two examples come to mind. Possibly they are particularly interesting by way of contrast, because they have the same social aspect, and because the planting against them is for the most part evergreen. The one is a large stone house, standing castle-like upon a hilltop in frank imitation of a French chateau. Dark yews are planted in great wide masses against the walls; an *actinidia* vine, that looks almost evergreen with its ample, glossy foliage, clambers up a corner; a hawthorn flanks a gateway; several cedars stand guard beside the doorway, and a hemlock fills a congenial corner by a windowless wall space. This planting accentuates the very ruggedness of the house. The other house, in the vicinity of Philadelphia, is of an English type, with a long, irregular plan, a series of mullioned windows, and a many-gabled roof. Here the planting reflects the refinement of its form and its beautiful details. All along the front of the house there extends hedging of clipped box with a few unclipped box plants in a corner. Such uniformity in planting gives the house a fine reserve. Added to this dominant effect are honeysuckle, ivy and *euonymus* creeping up the stucco walls; a pink hybrid tea rose reaches the

second story window, climbing out the rough stone, and *pachysandra* and Christmas roses make a charming edging for the box. It is the mingling of dignified box and the more spontaneous planting that interprets so charmingly the character of the house.

There is, however, another important reason for the real effectiveness of planting in connection with a house. This depends upon its coordination with the planting around it. The two examples of planting just mentioned bring out some interesting details of this coordination. The planting against the large stone house is so effective because it is the culmination of the planting that borders a long, winding drive up a hill. Tangled growths of roses and *hypericums* and elders with their lighter foliage are planted along the drive in the open. This planting gives way to darker foliaged plants, such as dogwoods and viburnums where the wooded areas begin, and these give way in their turn to still heavier planting against the house walls, the walls being strong enough to bear it. This type of planting would utterly destroy the effectiveness of a less rugged house in a less exposed situation. In some instances one must go to quite the opposite extreme, for only by the most careful assembling of the finest types of plants will one be able to express the refinement of the house.

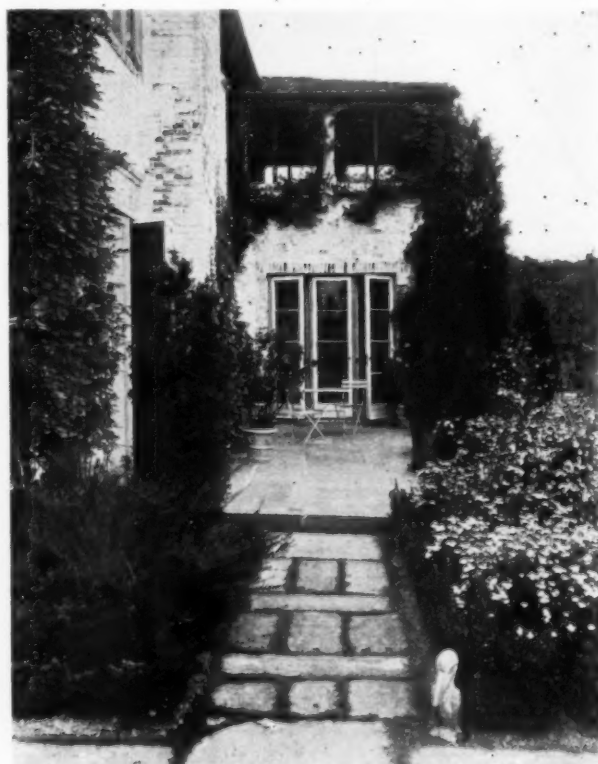
When we consider the planting against the house wall from this angle, it is like a "close up" in a motion picture. We seldom get these close ups. We begin to see the house from some little distance. We may admire the way a large tree spreads its

branches across the face of the house. We may look at the house from across the street, and admire the glimpses we get of it over hedges and boundary planting. We may look at the house down a garden path and find that the flowers have an enlivening effect upon the building as seen from a distance.

Many people complain of the bareness of their houses, and make the mistake of trying to solve their problems by planting heavily against the house walls. It is the hedges, fences and walls around the house, the terraces and gardens, the overshadowing trees and the wooded background that make a house nestle into its setting. The planting against the house should help accentuate and develop the spirit of these surroundings. Since every house in its special location demands a distinctive setting, it would be idle to attempt to lay down specific rules for its development. It may be worth while, however, to suggest but a single example, useful because of its very simplicity. One can easily call to mind some fine old Colonial house in Salem, or perchance in Concord. Great gracefully arching elms tower over the house. There is a delightful interplay of light and shade in the branches and upon the house. It is, of course, not only the dignified house itself that makes for the effect, nor the great old trees; not only the picket fence with its attractive gateway, nor the lilacs against the house wall; not only the old fashioned garden nor the leafy background. It is really not any one of these separately that one notices, but rather the charm of the ensemble, and what is accomplished here it is possible to secure almost anywhere.



Flowering Shrubs and Vines Unite the House with the Garden



A. Good Example of Harmony Between Foliage and Building Textures

The Smaller Civil Architecture of England

VI. THE MARKET HALL, TAUNTON, SOMERSET

By ROGER WEARNE RAMSDALL and HAROLD DONALDSON EBERLEIN

THE Market Hall at Taunton, the county town of Somerset, was built in 1772 from designs prepared by Coplestone Warre Bampfylde. Bampfylde was not an architect by profession, but a landscape painter. He was the only son of John Bampfylde, Member of Parliament for Devonshire, and came of a family that had long been prominent in the affairs of that county and that part of England.

Living himself at Hestercombe, near Taunton, he became closely identified with the interests of the county town of Somerset rather than with the concerns of Devonshire, and was sometime Colonel of the Somerset militia. Between 1763 and 1783 his pictures were hung in the exhibitions of the Society of Artists, the Free Society of Artists, and at the Royal Academy. Besides painting, he also etched a number of plates, and he likewise made humorous designs of Christopher Anstey's "Election Ball," which was published at Bath in the year 1776.

Whatever pedantries, affectations and constriction of style the meticulous Palladianism fostered by Lord Burlington and his group of purists may have been responsible for, it nevertheless accomplished one substantial result. It made architectural composition and the niceties of design a living issue; it created a standard of taste; it quickened architectural consciousness and sense of responsibility, and it caused the cultivated public to regard architecture not as a thing apart from daily life, a thing of complex technicalities, in which the people had neither

part nor lot, a thing far above their heads that must be left wholly to professionals and about which it was little short of presumption for a layman to have an opinion, but rather as a matter of popular concern that affected everyone at all times as an issue of universal and vital interest. It encouraged the formation of intelligent and appreciative judgment of the art of building in every one of its many phases.

Eighteenth century Palladianism had its limitations, and it engendered a narrowness of outlook that condemned as "barbarous" every form of architectural expression not based upon Classic principles; its devotees were singularly blind to the merits of everything outside the pale of their chosen field. To them all Gothic forms were anathema, to say nothing of every other mode that accorded not with the Palladian. Nevertheless, this all-exacting, all-engrossing Palladianism accomplished so much good in the establishment of a general architectural sense that we can afford to overlook the restrictions it imposed upon breadth of appreciation.

When Bampfylde designed the Market Hall at Taunton the dominance of strict Palladianism had been somewhat mitigated by the influence of the style brought into vogue by the brothers Adam. Classicism was not less paramount in the popular conception of fitness, but it was a broader, more tolerant, more human Classicism that gave greater scope for individual interpretation and a wider field for ordered diversity in both composition and detail.



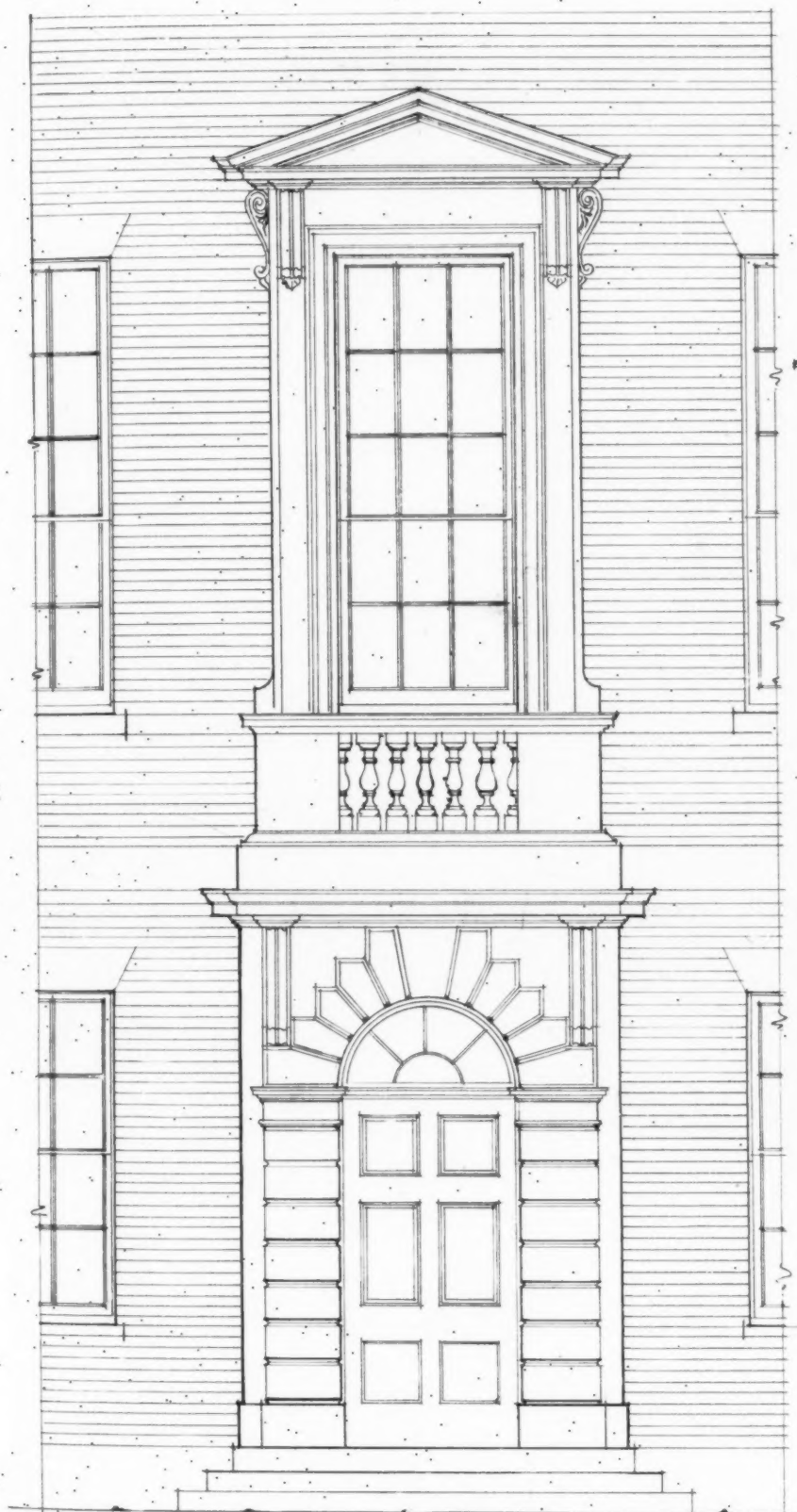
Front View, Market Hall, Taunton, Somerset



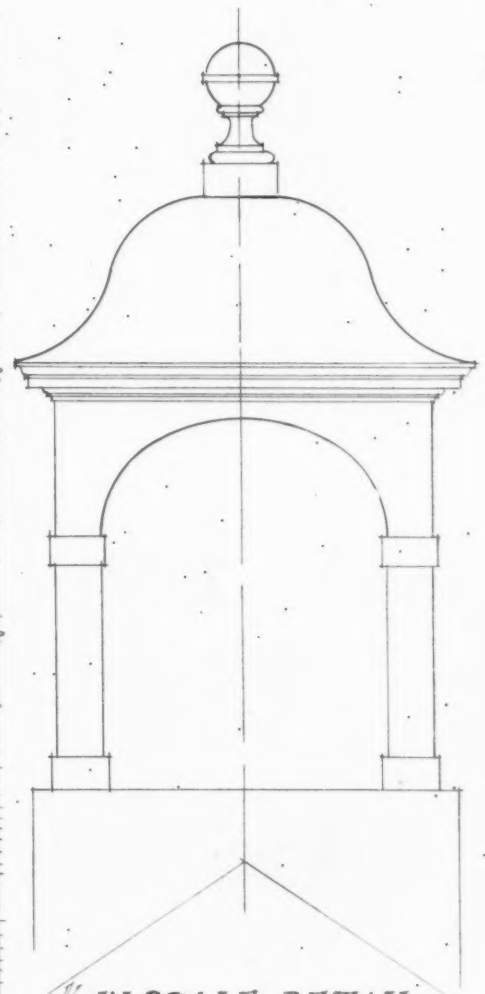
Detail, Front Entrance, Market Hall, Taunton, Somerset

It is unfortunate that no photographic record can show the Market Hall as it was when completed from Bampfylde's designs. One bay of each market hall, at the ends farthest from the central block, was demolished some years ago in order to widen the thoroughfares that converge in front of the plaza; and indeed the demolition of the entire structure was seriously contemplated at a time when architectural appreciation was at a low ebb. This danger has now happily been averted, and the Market Hall, the only piece of creditable civil architecture possessed by Taunton, with the exception of the old Assize Court and the Judge's Lodging in the Castle, has gained recognition as a monument well worthy of preservation. The destruction of the end bays of the market halls necessarily detracts from it.

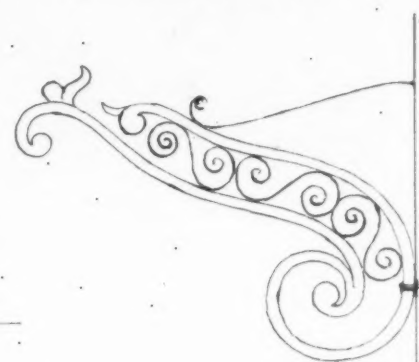
The building is of red brick with stone trim, and presents an aspect of impressive dignity. With the exception of the doorway, the window above it and the carved cresting enclosing the clock, there is little detail to speak of, and the structure owes its effect almost entirely to interest of composition, which is unusual and full of individuality. The breadth and simplicity of conception with which a civil problem was treated may well prove full of valuable suggestion for modern employment. In the central block the ground floor is devoted to offices and board rooms; the whole first floor is given over to a lofty assembly hall or ballroom with a gallery at one end, while in the attics are storerooms and quarters for the keeper and his family. The open arcades at the sides afford ample accommodation for the markets.



*1/4 IN. SCALE DETAIL
OF MAIN ENTRANCE.*



*1/2 IN. SCALE DETAIL
OF CUPOLA.*

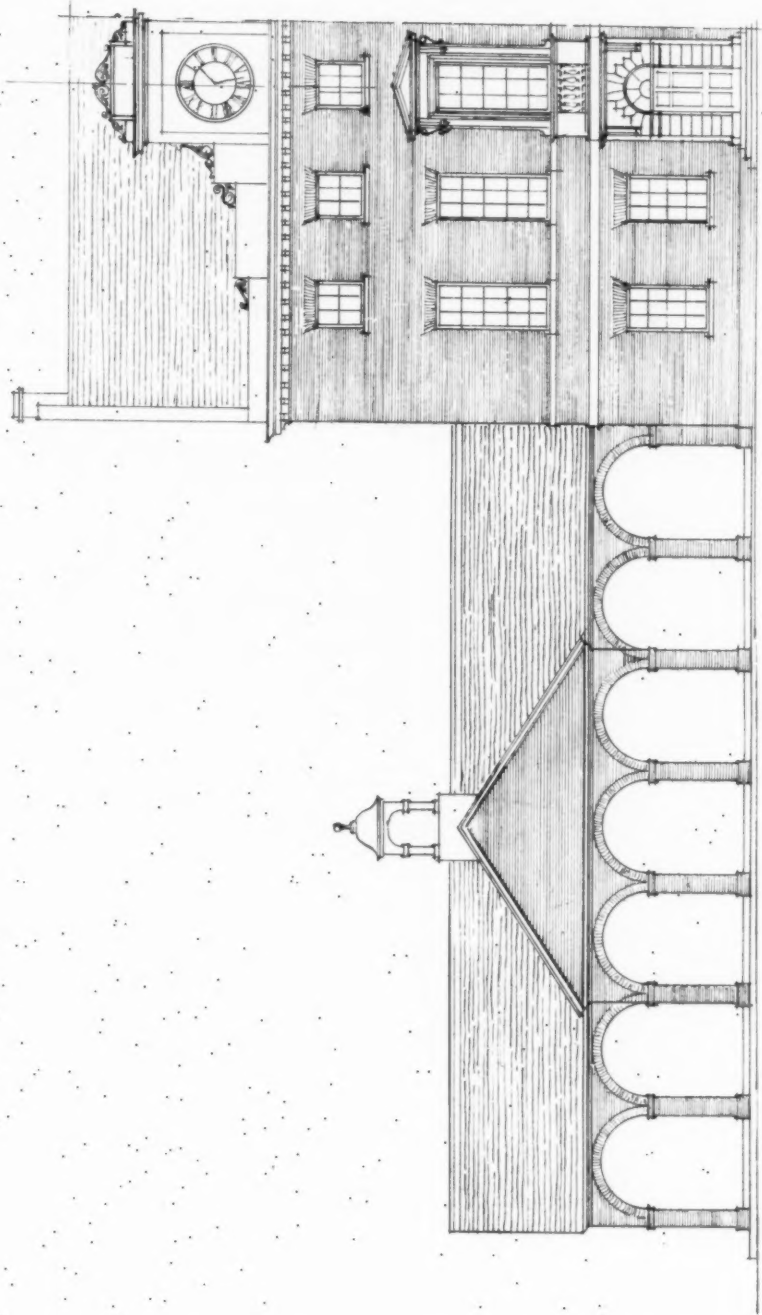


*1/2 IN. SCALE DETAIL
OF IRON BRACKET.*

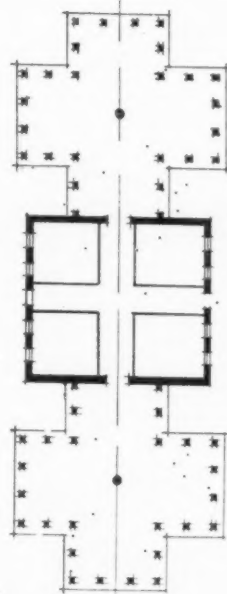
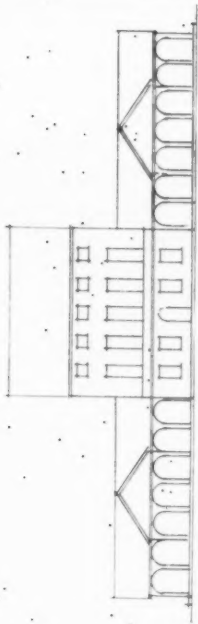
MARKET HALL
TAUNTON, SOMERSET.



MARKET HALL, TAUNTON, SOMERSET

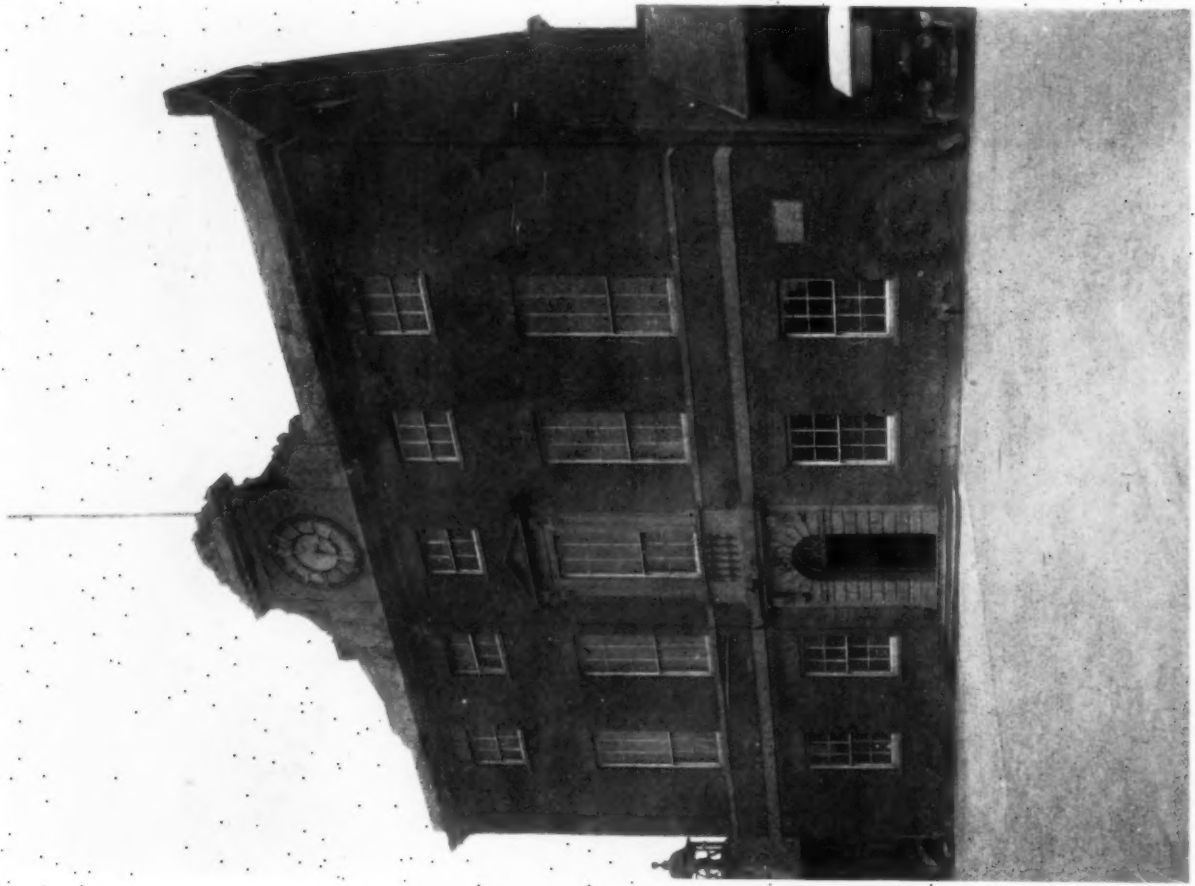


HALF ELEVATION
 $\frac{1}{16}$ IN SCALE

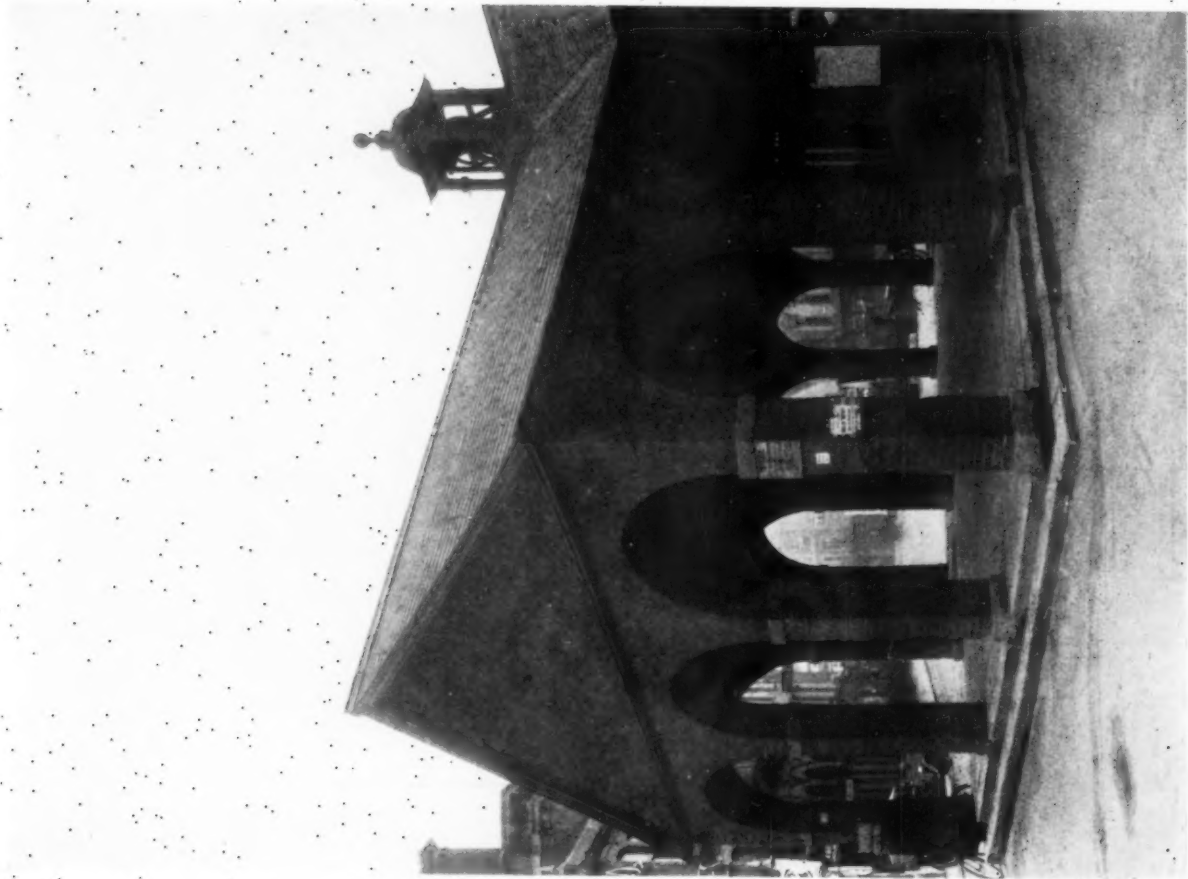


KEY DIAGRAM.
 $\frac{1}{64}$ IN SCALE.

MARKET HALL,
TAUNTON, SOMERSET.



DETAIL, MAIN BUILDING

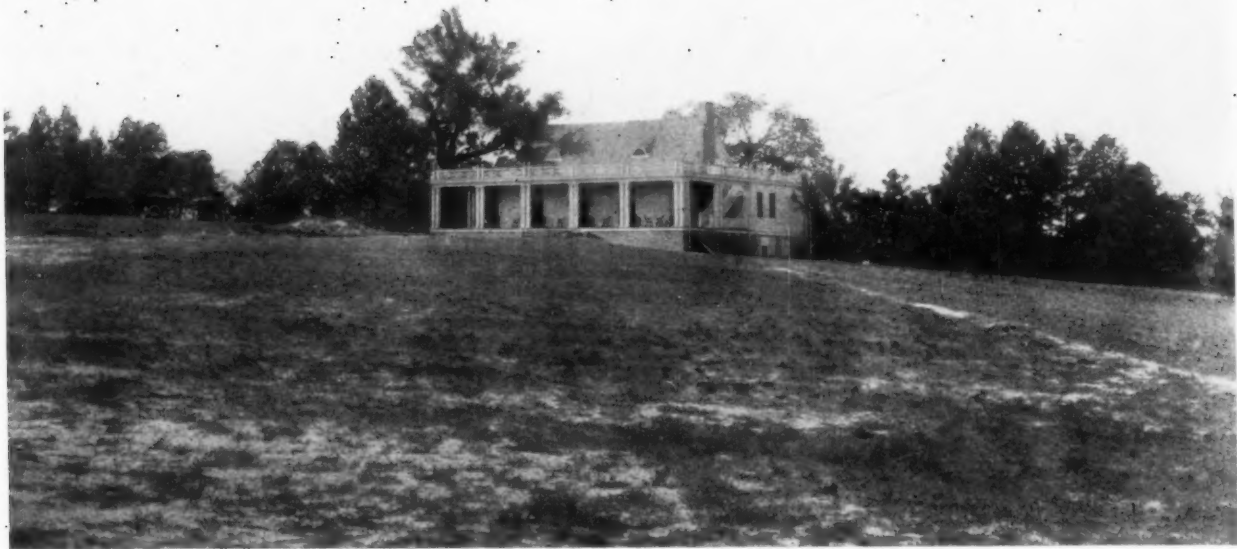


DETAIL, MARKET SHEDS

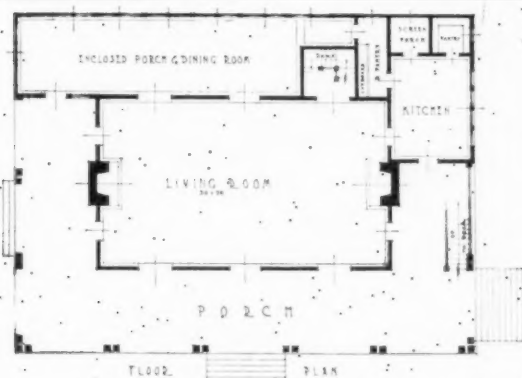
MARKET HALL, TAUNTON, SOMERSET

Fayetteville Country Club, Fayetteville, N. C.

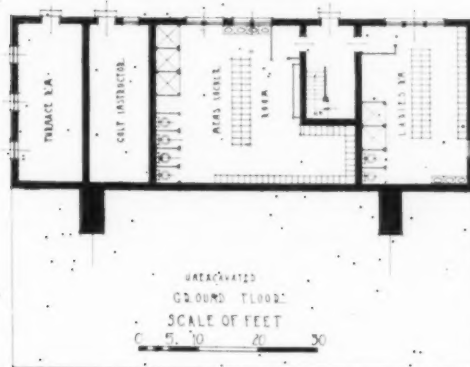
STILES S. DIXON, Architect



View from the Golf Course



Main Floor



Basement

THIS little country club at Fayetteville, N. C., shows that it is possible to give architectural charm and distinction to even a small clubhouse, which though complete in every way, cost but \$15,000.

The plan shows a story-and-a-half building located on a falling grade, so that ample space is obtained for a large basement across the back of the structure. No excavation was made under the front of the building, but it was possible to locate in a rear basement a large locker room for men and a smaller locker for women, a furnace room, and a room for the golf instructor. These rooms are all 8 feet, 6 inches high, with large windows above grade, insuring good light and ventilation. On the main floor of the clubhouse is a large living room, surrounded on three sides by a wide, hospitable porch which provides necessary shade. Casement doors with arched tops open onto the veranda.

At the rear of the living room an enclosed stairway leads to the basement, where the locker rooms for men and women are located. The architectural style used for the exterior is a simple adaptation of the Colonial. Columns in groups of two support the porch roof; above which is a low balustrade. The clubhouse itself is covered with North Carolina pine siding, laid 10 inches to the weather. This siding and the exterior trim are painted white. Small "eyebrow" windows ventilated the spaces under the roof and also above the ceiling of the living room.



Near View, Showing Porch Details



Living Room, Fayetteville Country Club, Fayetteville, N. C.

Stiles S. Dixon, Architect

THE BUILDING SITUATION

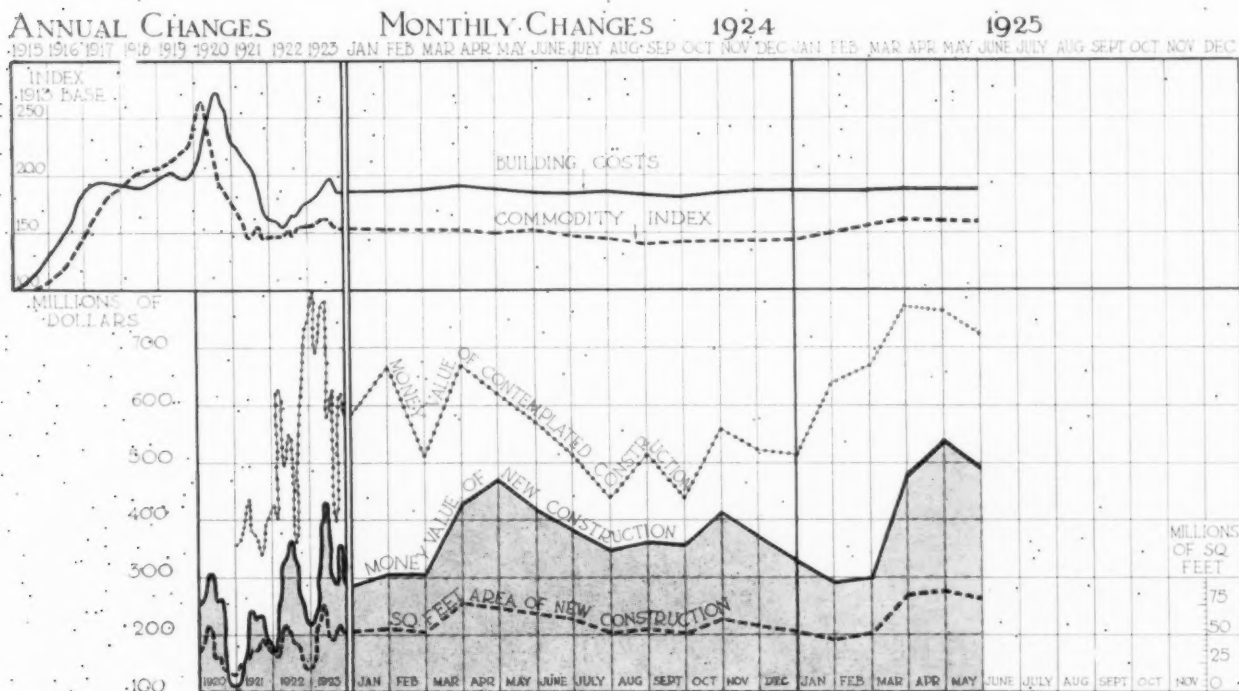
A MONTHLY REVIEW OF COSTS AND CONDITIONS

BUILDING activity during the months of April and May has assumed record-breaking proportions, according to the reports of the F. W. Dodge Corporation. The total value of new contracts let during the first five months of this year has amounted to over \$2,000,000,000 and represents an increase of approximately 10 per cent over that of the corresponding period of last year. During the month of April, the total value of new contracts let showed an increase of 14 per cent over that of March and 15 per cent over that of April of 1924. The total value of new contracts, as shown in the chart below, broke all records for any previous month. New York state and northern New Jersey indicated an active return of interest in building by the recording of new contracts let, amounting to \$132,000,000, which was an increase of 57 per cent over March and 22 per cent under the total for April of last year, the record-breaking month for this district. The value of plans filed in April was the highest ever recorded, indicating a period of continued activity, 25 per cent higher than in April, 1924.

This construction activity was well spread over

the country, the central West showing the highest volume on record, with a great increase in contemplated new work. The month of May, as shown in the chart, recorded a continuance of this amazing volume of building. The total value of new contracts let during that month represents the second highest monthly total ever recorded, having been exceeded only in April of this year. The contemplated new work continued unusually high in volume during May, being only 6 per cent under the April figures, and 24 per cent higher than the amount reported in May, 1924. In the New York and New Jersey district the total of new contracts let was nearly 3 per cent over that of the corresponding period in 1924, while contemplated new work recorded for this district was greater than in April, and 59 per cent more than in May, 1924.

While it was expected that the early months of 1925 would show a volume of new building approximately equal to the early months of 1924, it is interesting to note that all expectations have been exceeded, probably due to a fairly well stabilized condition in the building material and other fields.



THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs*. This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index*. Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction*. Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Corp., and *Engineering News-Record*. (4) *Money Value of New Construction*. Total valuation of all contracts actually let. The dollar scale is at the left of the chart in millions. (5) *Square Foot Area of New Construction*. The measured volume of new buildings. The square foot measure is at the right of the chart. The variation of distances between the value and volume lines represents a square foot cost, which is determined first, by the trend of building costs, and second, by the quality of construction.

BUSINESS & FINANCE

C. Stanley Taylor, *Editor*

Important Principles of Architectural Economics

PART II. THE FINANCIAL ANALYSIS OF A PROJECT

By JAMES M. GREEN, JR.

EDITOR'S NOTE. Part I of this article, on the subject of the necessary preliminary investigations before planning a building, appeared in THE ARCHITECTURAL FORUM for May, 1925. In these pages certain important details of financing are discussed, details which should have careful consideration.

The financial analysis (IV) of a proposed venture is based chiefly upon determination of these items:

1. Method of financing.
2. Ultimate cost.
3. Carrying charges and operating expenses.
4. Revenue-producing possibilities.

The method of financing is too individual a matter to be broadly discussed, and it varies unceasingly in accordance with the availability of funds and interest rates in different places at different times.

Ultimate Cost.

1. Value of land, grading, sidewalks, etc.
2. Carrying charges during construction.
3. Column spacing.

In a building eight or ten stories high, the spacing for offices should take precedence in importance over that for stores, because the rentals from the offices are greatest.

5. Plan arrangement.

Generally a centralized service arrangement requires less sacrifice of space than distributed units; and likewise the flexibility for space arrangement is increased on the various floors. Other items to be considered in relation to plan and design are:

Locations of public utilities.

Location of courts.

Fenestration.

Exterior treatment.

Advisability of including power and lighting plant in the equipment of the building.

Interior treatment.

Appearance of lobby, corridors and general finish, upon which depends much of the building's value.

Character of plumbing and heating.

Lighting service.

The investment problem largely becomes the deciding factor in the interior equipment of the building. It is here that success or failure, as well as utilitarian life, is often determined.

Elimination of dead space and minimizing cost of structural features.

Efficiency in control.

6. Proper execution of the contract documents and the efficiency of business administration during time of promotion and construction.

Carrying Charges and Operating Expenses.

During the progress of design analysis must be carefully made, estimating revenues and disbursements. Expenditures will be made up of these items, which represent the total investment in the venture:

Cost of land.

Legal services.

Architects' and engineers' fees.

Loan brokers' commissions.

Promotion.

Interest during construction.

Taxes.

Insurance.

Cost of construction.

Operating equipment and capital.

The Fixed Annual Charges include:

Interest on mortgages.

Amortization.

Sinking funds.

Taxes.

Insurance.

Operating Expenses include:

Administration:

Salaries; commissions; office expenses; supplies; legal and advertising charges.

Janitor:

Wages and supplies; living quarters and overhead.

Engineering department:

Wages; supplies; repairs; fuel supply and ash removal.

Elevator service:

Power; repairs; wages; supplies; uniforms.

Electrical service:

Current and lamps.

Alterations and repairs:

Painting and glazing; plumbing and steam fitting; carpentry; masonry; plastering; electrical work; millwork; hardware; marble and tile; rubbish removal.

General expenses:

Wages of watchman; water; toilet room supplies; miscellaneous.

The sum total of the fixed annual charges and the operating expenses fixes the gross disbursements. While the carrying charges are stable, the operating

expenses are subject to much variation, depending upon the purchasing power of the management and its control of labor. In the schedules given here the sources of revenue cannot be placed, because each building determines its own. The operating expenses added to the items of taxes and insurance, when deducted from the total revenue, give a sum designated as net earnings upon the total investment. It is apparent, however, that there must be deducted from this balance the annual costs of financing. The remaining sum is then the earned revenue.

There are a few independent variables which directly affect income and which should be noted here. Taxes: Variation in taxes, in different localities renders it difficult to fix a rate. On a rising realty market the assessments are too low, and conversely on a falling market.

Mortgages: The percentages that can usually be secured upon mortgages vary from 50 to 75 per cent of the value of the property, depending upon the security, the yield, the condition of the money market, and the method of securing funds.

Rented Area: The ratio of the rented area to the total rentable area is contingent upon service and demand, varying with times and conditions. When a section of a city is fully rented at fair rates, new construction and consequent competition are stimulated, causing vacancies.

Operators consider that 10 per cent of vacancies over a term of years is fair. Therefore, the actually rented area is really only 90 per cent of the apparent rentable space.

It should be understood also that the unit of a square foot of floor space, with a price attached to it, gives no idea of location, style of architecture, materials used in construction, safety, light, ventilation, convenience, character of neighborhood, or management and service offered, all of which enters into the value of a square foot of area. Permanent partitions, enclosing corridors, elevators, stairways, toilets, janitor closets, etc., possess the same relation to rentable area as do outer building walls. These have been designated "areas of no return."

After a typical plan has been adopted for the floors above the first, and the amount of revenue each floor is expected to yield is established, a standard has been created which should remain constant throughout. This standard is not affected by the number of tenants. When conditions arise which make it necessary to increase or decrease basic charges, and when unusual alterations change the appearance of a floor or throw corridor spaces into leased premises, the form of the square foot area may be changed to meet the new conditions, but the amount of the typical rentable area should not be changed, or the calculations may be upset.

It is highly desirable to have the total rentable area of a floor remain the same regardless of the number of subdivisions. This is accomplished by taking measurements to the middle of the separating partitions. To determine the number of square

feet in a given area, measure from the plaster surface of the outer walls and from the plaster surface of the corridor and other permanent partitions, thence to the center of partitions that separate the premises from adjoining rentable areas. No deductions should be made for columns or other necessary structural projections.

The value of stores or shops is based upon site rather than upon unit price. The use of glass and plaster varies greatly in store fronts, because of the diverse needs of tenants and also on account of variations in municipal ordinances. For these reasons it is found better to measure the rentable area of stores from the building line. Some fronts have little glass or none at all, but full glass fronts may be installed at any time, and street frontages have high selling values regardless of glass installation. Areas on alleys are of doubtful value, and hence such frontages are not classed as street frontages. To determine the number of feet in a rentable store area, measure from the building line on the street frontages and from the plaster surface of other outer building walls; from the plaster surface of corridor and other permanent partitions to the middle of minor partitions separating adjacent rentable areas. No deductions should be made for vestibules inside the building line or for columns and other necessary structural projections.

The particular difference in buildings will be found in the areas set aside for the joint use of tenants, such as corridors, toilets, elevators, and stairways; and in the areas utilized for the building's service, such as janitor closets, pipe shafts, meter closets, etc. The cost of cleaning and maintaining joint areas is charged to the tenants in proportion to the spaces rented. It is, therefore, unnecessary that such spaces should be measured or considered in calculations, but if the areas used for the building's services are measured, then the same methods as applied to reckoning rentable areas should be employed. This has already been explained.

In basements, if rentable areas extend beyond the building line under the sidewalk, measure from the finished surface of the retaining wall and the plaster surface of corridor and other permanent partitions to the middle of partitions separating adjacent rentable areas. If the rentable area is entirely within the building line, measure from the plaster surface of outside walls, and so on in accordance with the usual practice of measuring office floors. No deductions should be made for columns, projections, and footings necessary for construction.

The element of depreciation is contingent upon the assumed commercial or economic life of the building, and on the rate at which the stockholders can conveniently accumulate a sinking fund to finance required improvements. If the economic life of a building can be estimated with reasonable accuracy and a certain sum be set aside annually at accrued interest, which sum should equal at the end of economic life the amount required to offset deprecia-

tion, there is assured protection against shortage. Then, in accordance with the formulae from the "Handbook of Cost Data," by H. P. Gillette, calculations of the theory of depreciation is readily convertible to rule in somewhat this manner:

Compound Interest

Let, A = accumulation of \$1 and interest during a specific period.

r = rate of interest, payments made at the end of year.

n = number of years.

then $A = (1 + r)^n$

It is convenient to bear in mind that interest compounded doubles the investment in approximately the number of years obtained by dividing 72 by the rate of interest. This is not strictly accurate, but for quick estimating it suffices.

Sinking Funds

To determine the deposit which must be annually placed in a fund, drawing compound interest and to equal \$1 at the end of a given term of years, let

n = number of years (economic life).

r = rate of interest.

d = the annuity or the sum deposited at the end of each year, bearing interest at " r " rate, which will redeem \$1 at the end of " n " years.

Then,

$$d = \frac{r}{(1 + r)^n - 1}$$

Here is a table giving the required annual deposit in a Sinking Fund to redeem \$1 in " n " Years:

Years	5%	4%	3%	2%
25	.02743	.02401	.02095	.01823
30	.02102	.01783	.01505	.01265
35	.01654	.01358	.01107	.00897
40	.01326	.01052	.00828	.00643
45	.01078	.00826	.00626	.00470
50	.00887	.00655	.00478	.00344

Now,

If " d " is the required annual deposit for a fund to redeem \$1 at the end of " n " years.

Then,

100 " d " is the percentage of the total cost of the building required for deposit to amortize the cost during its economic life.

For simple demonstration, let us suppose that \$1,200 represents the fund to be accumulated, or else the cost of the building. Then by the formula:

$$d = .02401$$

$$d \% = .02401$$

100% $d = .02401 \times 100\% = 2.401$ per cent, hence the depreciation in this instance is shown to be nearly $2\frac{1}{2}$ per cent annually.

Now, if it is desired to redeem \$1,200 at the ex-

piration of 25 years, the funds to bear interest at 4 per cent, then the problem might be expressed thus:

$$d = .02401 \text{ which redeems } \$1.$$

$$\$1,200 \times .02401 = \$28.812 \text{ which is the annual required deposit.}$$

The formula is conversely solved thus:

The worth or amount at the end of " n " years invested annually at " r " per cent is

$$(1 + r)^n - 1$$

$$W = \frac{(1 + r)^n - 1}{r}$$

$$d = \frac{1}{r}$$

Variable Fundamentals Affecting Returns (V.)

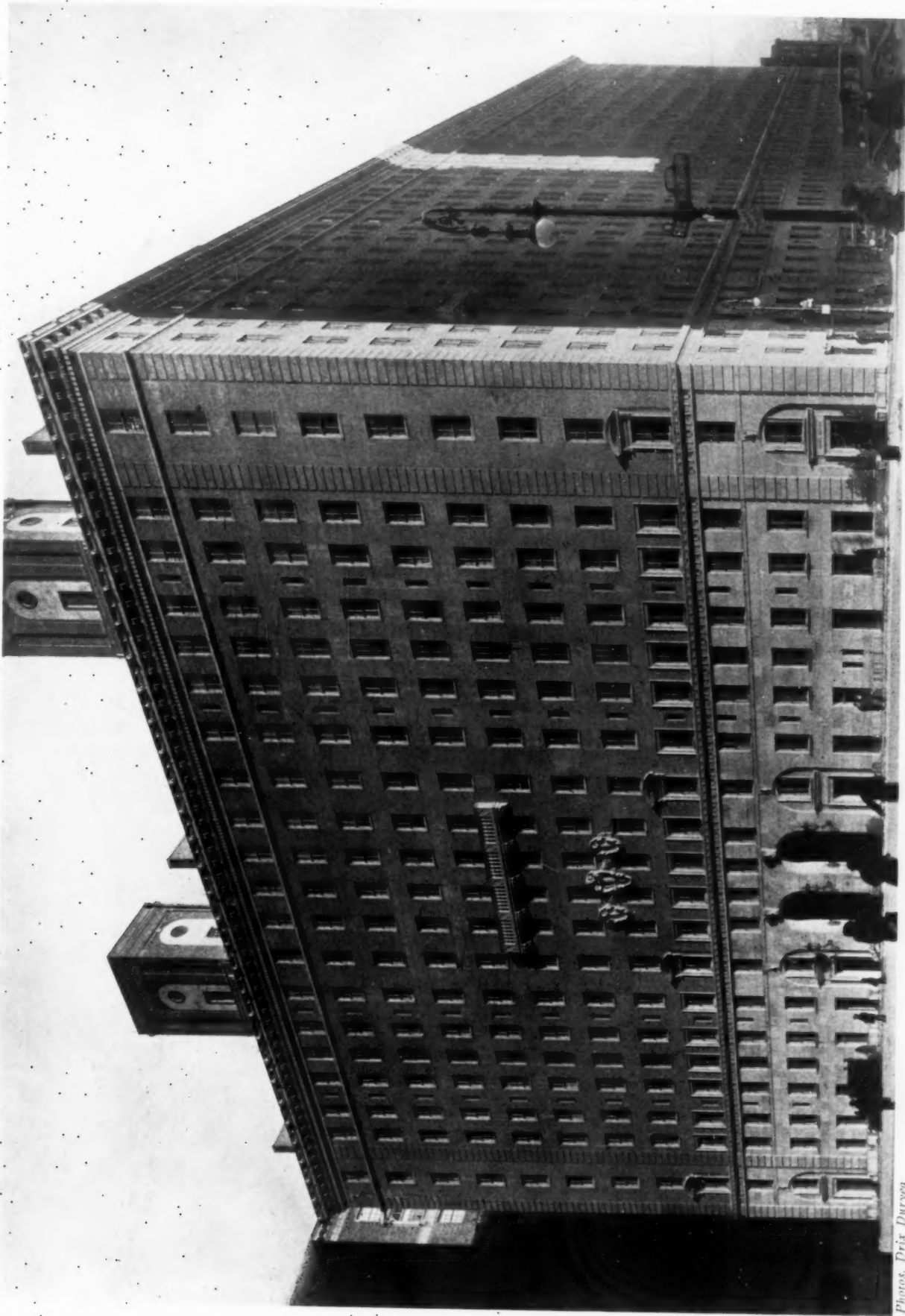
It is essentially desirable that the various factors assimilated in a design should be determined by the relative importance of each. Various kinds of equations have been introduced to express solutions, but the writer is of the opinion that there is no method as dependable as making trial solutions until the mathematical skeleton is perfected. If, after making a general solution containing nearly all of the principal factors involved a sort of budget is determined upon, and if particular emphasis is laid upon investigation of the individual variables, the financial future is reasonably under control.

The fundamental variables may thus be classified:

1. Cost of Land. This, however, is truly no variable, since no architectural problem can rationally be studied until the actual site is determined upon.
2. Average Annual Gross Rental per square foot.
3. Cost of Building per cubic foot.
4. Cost of Operation.
5. Number of Rentable Stories.
6. Ratio of Rentable Area to Gross Area.
7. Ratio of Building Area to Lot Area.

The value of city buildings is based upon earnings, while that of farm property is based upon market prices. City buildings should not be valued upon the cost to construct or reproduce, but on the basis of their appropriateness to a given use for which there is an active demand. It is the ignoring of this fact that brings realty booms to dire ends, for prices have been artificially stimulated without due regard for a conservative income based upon normal demand. It is only safe to limit mortgage loans to such a sum that if operating expenses remain the same but gross rentals decrease one-third, the interest charges will be earned comfortably.

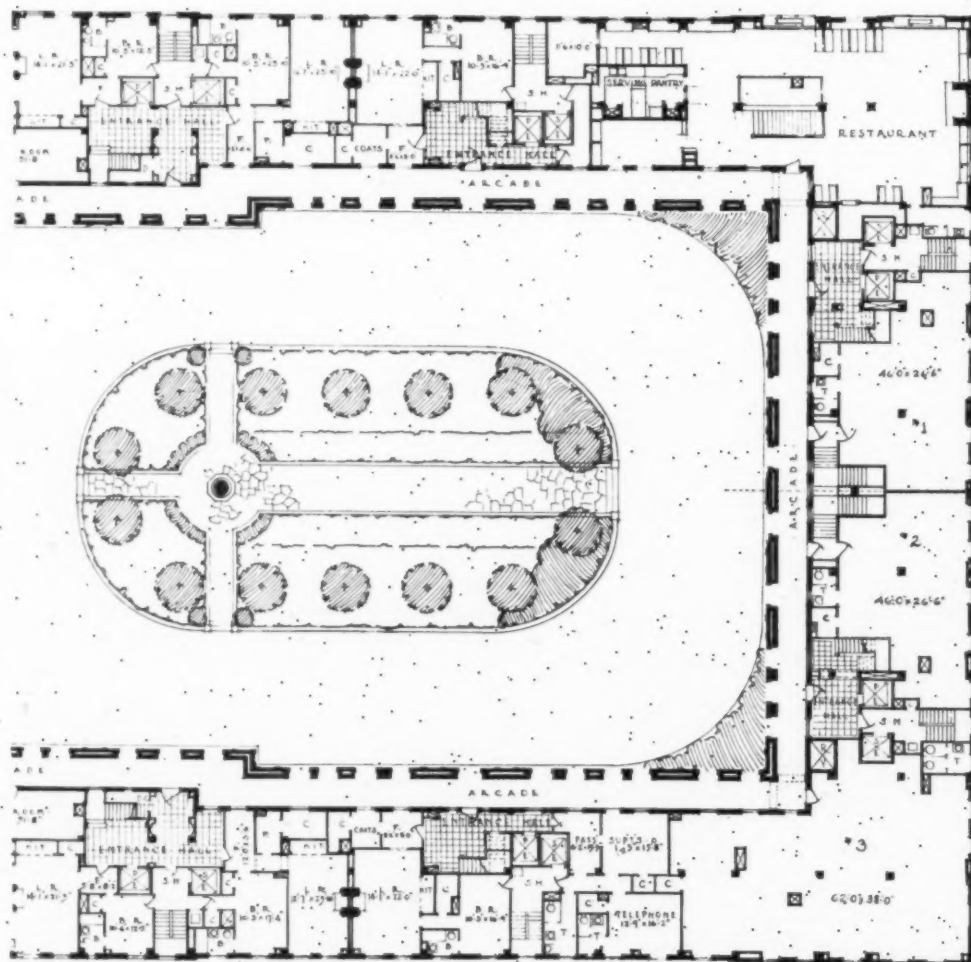
Solving the problems involved in the economics of structural investment requires painstaking research and conservative judgment of past, present and future values. It is because of the proper consideration of the factors affecting investment that buildings properly located, designed and operated, are not only safe and excellent reservoirs of capital, but give much pleasure and pride in ownership.



(Plans on Back)

NO. 277 PARK AVENUE, NEW YORK
McKIM, MEAD & WHITE, ARCHITECTS

Photos, Dria Duryea



PLAN, ONE HALF NO. 277 PARK AVENUE, NEW YORK

McKIM, MEAD & WHITE, ARCHITECTS



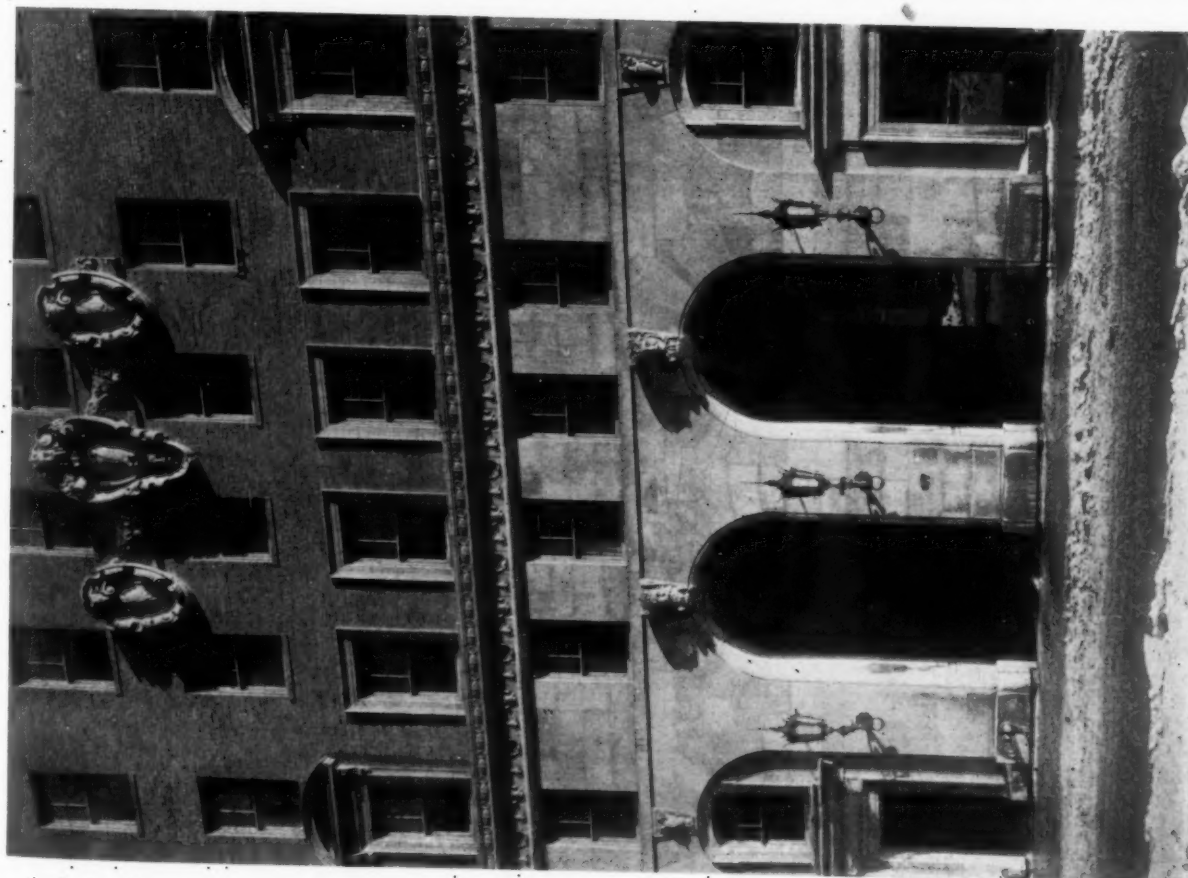
INTERIOR COURT AND GARDEN, NO. 277 PARK AVENUE, NEW YORK

McKIM, MEAD & WHITE, ARCHITECTS

Architectural
Library



ENTRANCE ARCHES FROM THE COURT



DETAIL, EXTERIOR OF ENTRANCE TO COURT

NO. 277 PARK AVENUE, NEW YORK
McKIM, MEAD & WHITE, ARCHITECTS

Architectural
Lit.



FRONT FACADES



(Plans on Back)

MAIN OFFICE
ELIZABETH DAILY JOURNAL BUILDING, ELIZABETH, N. J.
HOLLINGSWORTH & BRAGDON, ARCHITECTS



DETAIL OF ENTRANCE DOOR
ELIZABETH DAILY JOURNAL BUILDING, ELIZABETH, N. J.
HOLLINGSWORTH & BRADON, ARCHITECTS



STAIRWAY IN MAIN OFFICE

Architectural



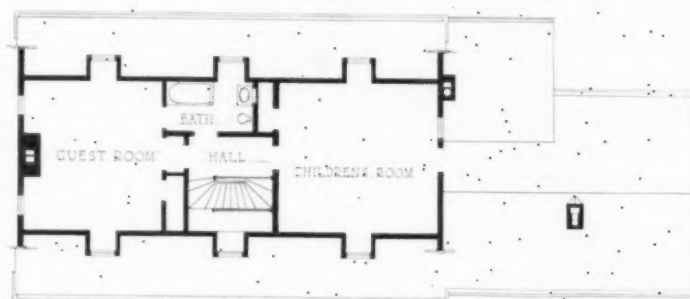
GARDEN FRONT



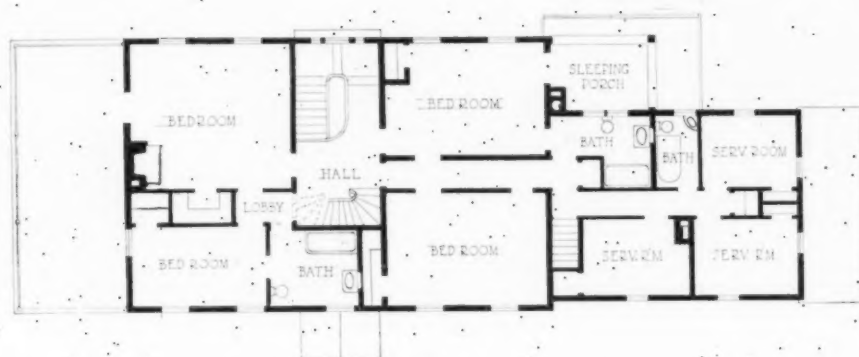
Photos: Kenneth Clark

HOUSE OF SEAVEY BATTELLE, ESQ., RYE, N. Y.
ELECTUS D. LITCHFIELD & PLINY ROGERS, ARCHITECTS

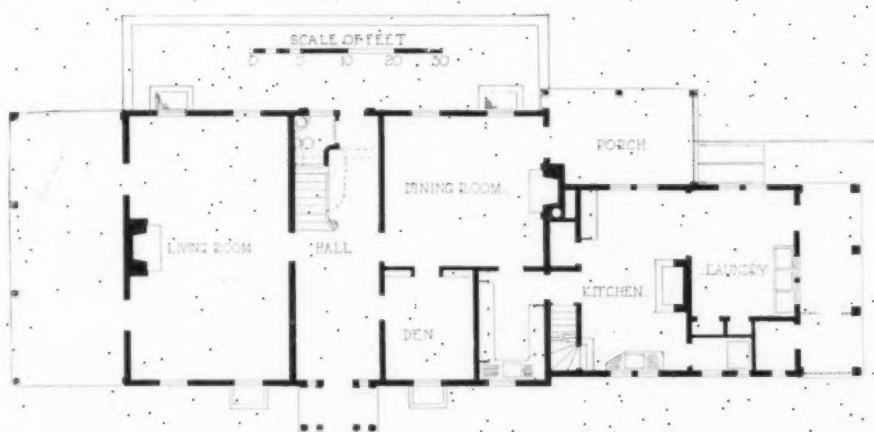
(Plans on Back)



THIRD FLOOR

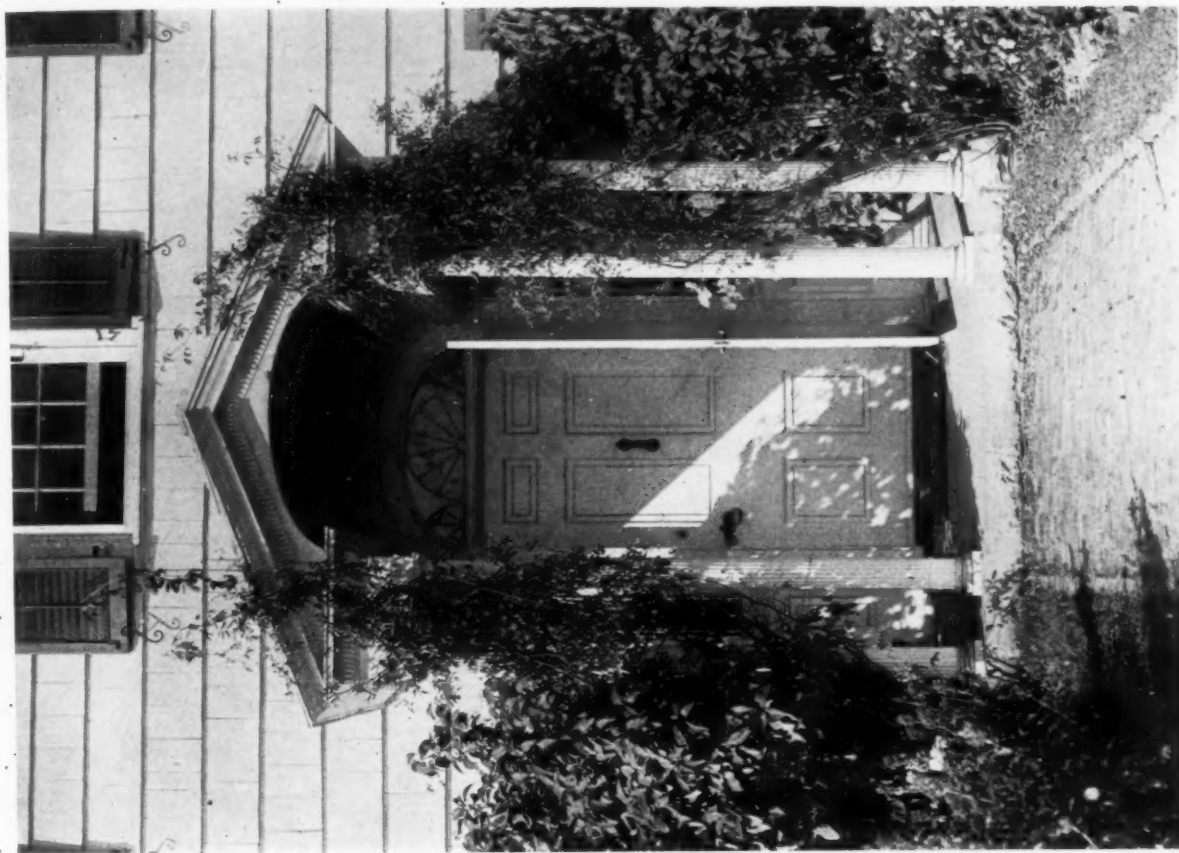


SECOND FLOOR

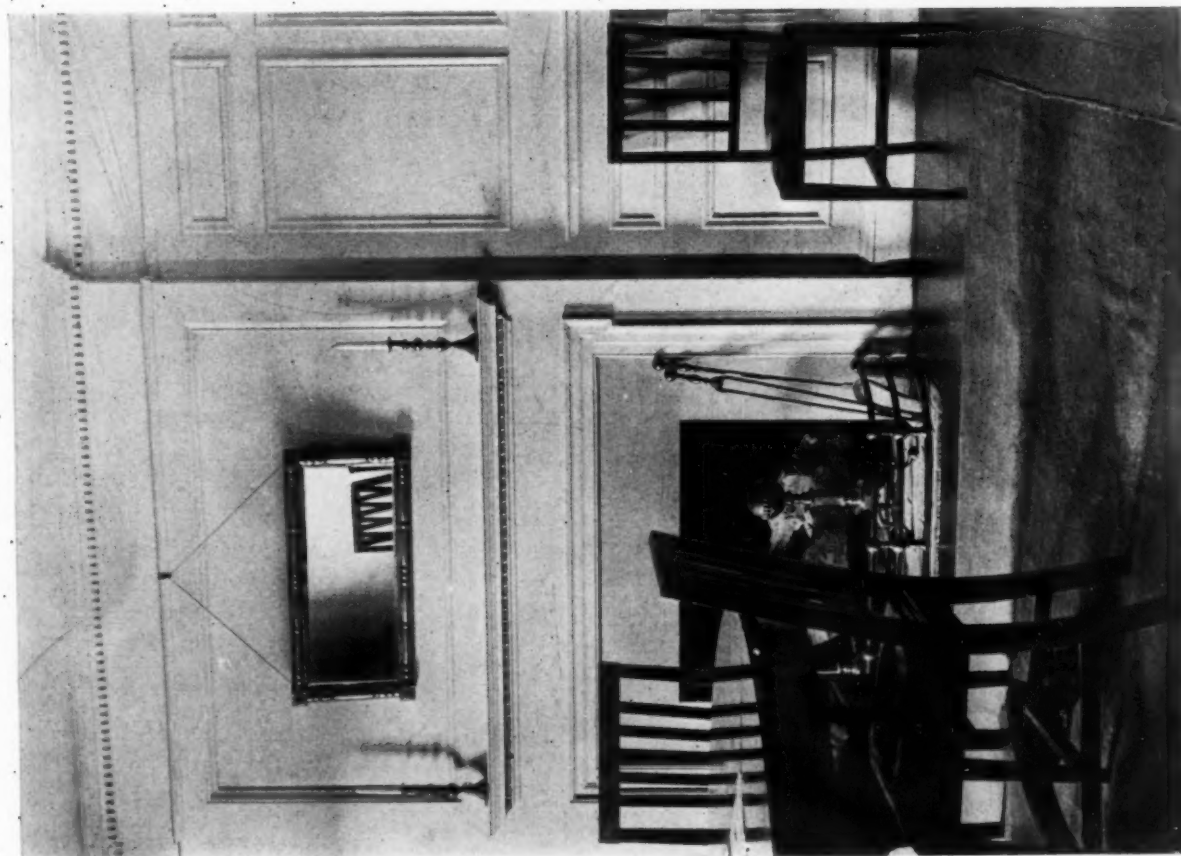


FIRST FLOOR

PLANS, HOUSE OF SEAVEY BATTELLE, ESQ., RYE, N. Y.
ELECTUS D. LITCHFIELD & PLINY ROGERS, ARCHITECTS



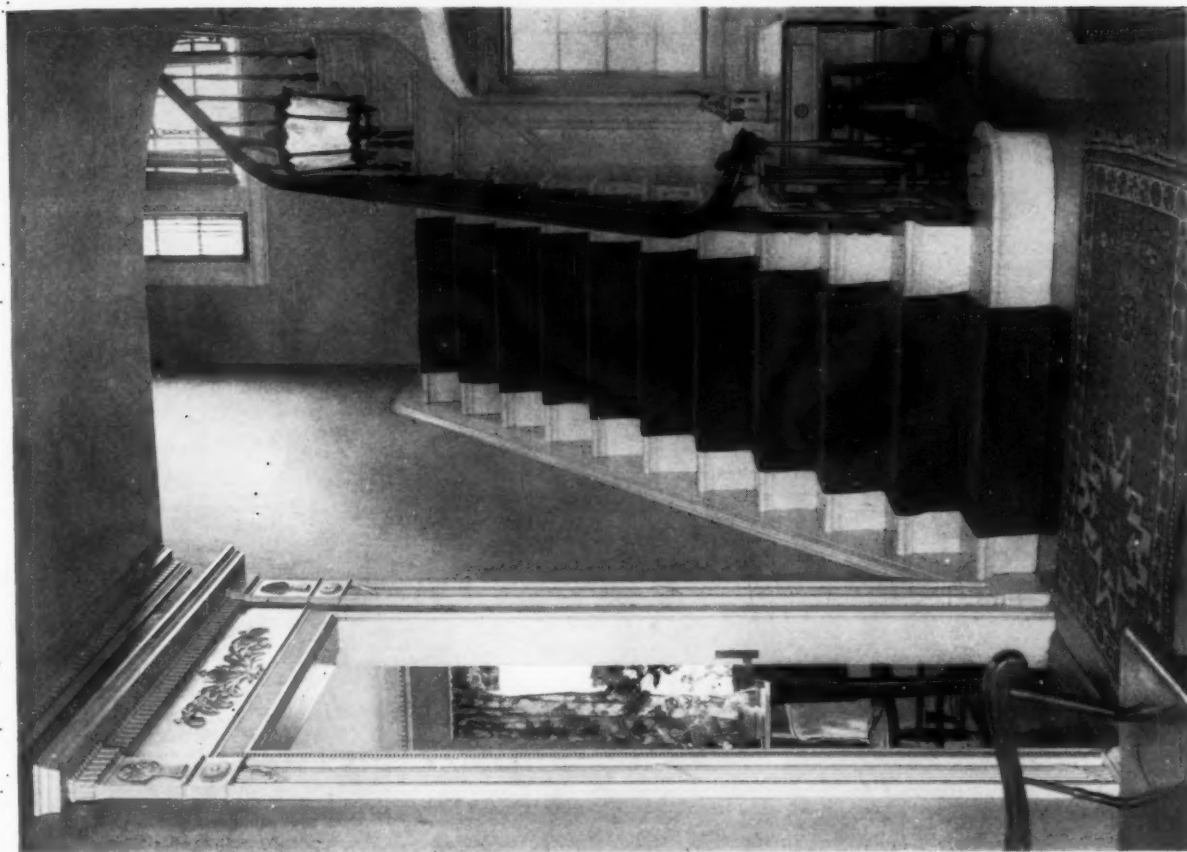
ENTRANCE PORCH AND DOOR



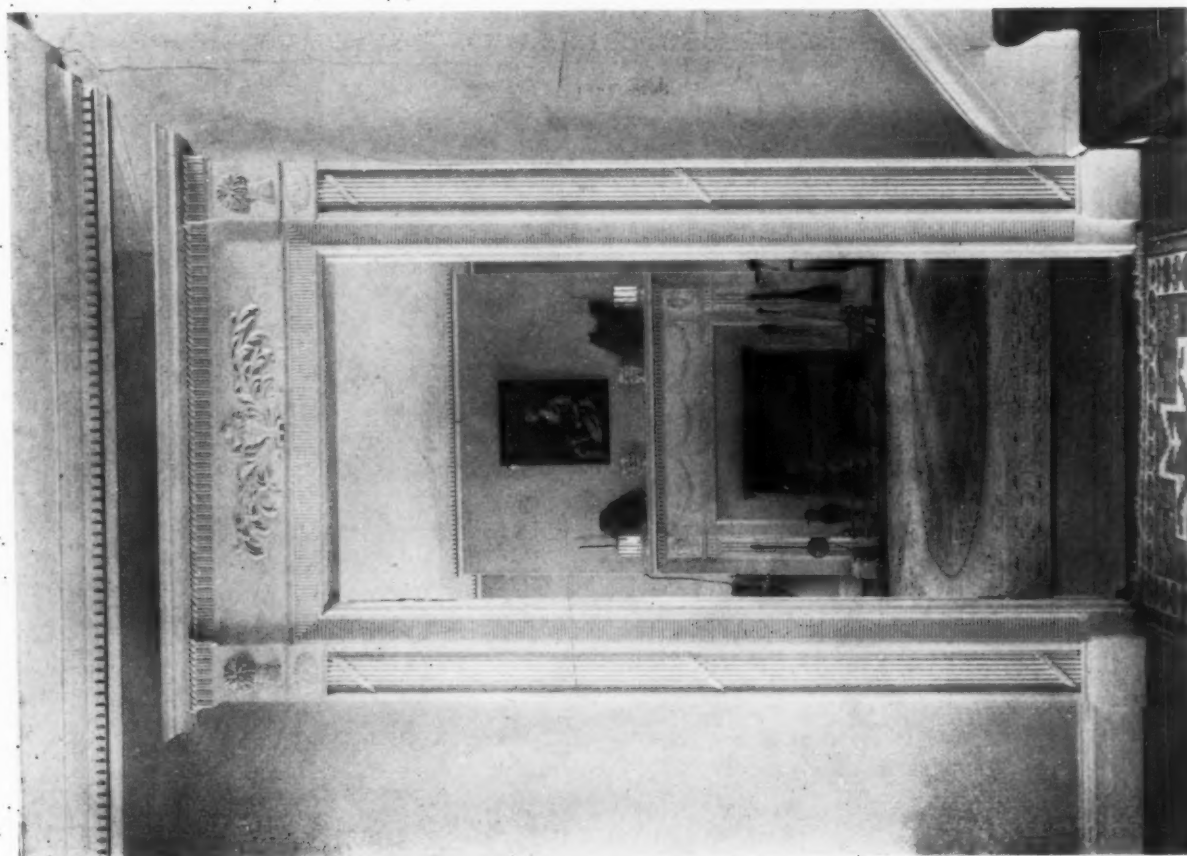
DETAIL IN DINING ROOM

PLANS, HOUSE OF SEAVEY BATTELLE, ESQ., RYE, N. Y.
ELECTUS D. LITCHFIELD & PLINY ROGERS, ARCHITECTS

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MAIN STAIRWAY



DETAIL, LIVING ROOM DOOR

HOUSE OF SEAVEY BATTELLE, ESQ., RYE, N. Y.
ELECTUS D. LITCHFIELD & PLINY ROGERS, ARCHITECTS

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SMALL BUILDINGS

The Small Schoolhouse

By CHARLES G. LORING

THE "little red schoolhouse" has now become a symbol to the poet and to the politician. To both of these sentimentalists it embodies childhood, democracy, the very cornerstone of our liberties. But the pioneer model is passing; hygiene has condemned it as unworthy.

The historic type, with its dirty outhouse, its stove which roasted one corner of the room and left the others frozen, its bell and rod, its slates and benches, is now as out of date as the well-sweep and the one-horse shay. Yet it should appeal in memory not only to the romanticist but to the modern extremist on standardization. The "floor space available for classrooms" was well-nigh 100 per cent; there were no corridors nor stairs, no administration rooms nor ventilation; no expensive steel or masonry, and no mechanical equipment, except the "airtight" and the kerosene lamp. By theory, its little candle of "efficiency" shone more brightly than that of the most approved million-dollar high school! To the present-day planner; however, the little red schoolhouse is a quaint antique, and its nearest direct descendant, the "portable," is but a makeshift. But even the temporary, portable schoolhouse of one or two rooms has modern plumbing, evenly distributed and easily controlled heating and ventilation, unilateral and ample natural lighting, and its walls and roof are insulated against heat and cold. There are a number of makes on the market, but their justification is to care for an overflow or emergency until more permanent and worthy structures can be erected. At times they supply a definite need.

The improvement in social and living conditions and the development of pedagogy constantly modify the grouping of pupils and their accommodations, and the schoolhouse architect must keep abreast or even ahead of the communities he serves. Each



Summer Street Schoolhouse, Springfield, Vt.
Brainerd & Leeds, Architects

new commission calls for an open and a sympathetic mind. The individuality of the problem must be expressed in plan and in elevation. The age and character of the pupils, the school organization and management, the lay of the land and the orientation, the historic background and the present surroundings, are some of the integral but often conflicting elements which must be reconciled and welded into one composition.

Schoolhouses have not yet been officially divided into groups of "large," "medium," or "small," but one of only eight classrooms may serve as a reasonable maximum

for the small type. For this group standardization of plan is impracticable, and standardization of the component parts is more limited than in the plants housing over 800 pupils. To the efficiency engineer of the rubber stamp type of mind, *standardization* means one given set of plans for each district with a given population; to the ultra-modernist, *standardization* is anathema, for no two rooms or arrangements of desks should be identical, lest "self-expression" be stifled. But to the army of teachers and school executives, law makers and building officials, architects and mechanical engineers who are working together to improve academic conditions, *standardization* means the coordination of the best practices and true economies. At best the word is dangerous, first because it may be so variously interpreted, and second because it may become a fetish. Too often an outgrown standard becomes a stumbling block, all the more difficult to remove because of its past worth. Flexibility is a far better ideal, for it means adjustment to the individual, to the changing curriculum, and to the growing community.

Public schools with a pupil capacity of 250 or less are built only in comparatively open districts, where land values are not excessive, and where there is no



Lakewood Schoolhouse, Madison, Wis.
Frank Riley, Architect

excuse for skimping the size of the lot. Space for playgrounds is indispensable to the modern ideals of the child's full development, and it serves all the year round as a safe center for the pupils during and after the school term. A generous lot insures ample light and air in the building, it reduces outside fire hazard, and it minimizes the danger to the pupils from accident on the highways or the car tracks; it also affords space for school gardens. In northern climates a building placed over 60 feet from the road means difficult snow removal where janitor service is limited and snowfall perhaps heavy.

The preservation of existing trees wherever possible insures shade in spring and autumn, and it removes the desolate air all too common in many playgrounds. Often an enthusiastic building committee will make a devastating "clean sweep" on the new lot, and later perhaps have to spend money on planting which could have been saved by a little imaginative foresight. A sloping lot is by no means a disadvantage as far as the school structure is concerned. Especially if the grade drops away from the main approach, it permits the basement to be excavated cheaply and allows good windows on one side. It also means that the coal or fuel oil can be delivered by gravity, and the ashes and rubbish removed at a lower grade without a hoist. On gently inclined land it is easy to guard against subsoil water and dampness, and to arrange for sewage and rain-water disposal in districts without municipal sewer mains, where the drainage problem is often serious.

The point of departure which has usually been fixed by the time the architect's services are called upon is the number of classrooms. The available funds are too often meager, and the problem resolves itself into a series of compromises between size and quality. If the appropriation is limited and the seating capacity and accessories definitely prescribed, then the bids of the contractors and not the wishes of the committee or board will be the final arbiters of whether the construction shall be fireproof or second class, whether the exterior cornice shall be of stone or metal, whether the type of heating and ventilation shall be selected for lowest first cost or for lowest cost of upkeep. In other words, shall each

item be "the best" or "good enough"? This is an expression of the axiom that if two of the three variables—Cost, Size and Quality—are fixed, then the third is determined also. If instead of the first two being prescribed the size and the character of the new schoolhouse are the elements definitely established, then the open market will settle the cost, whatever sum was voted in the town meeting!

For the schoolhouse with eight or more classrooms, the two-story type is the least costly to construct and to heat, and the lack of a visible roof with its expansive framing and covering of tile or slate is not a serious drawback. For the smaller school, however, especially where generous ground area is not an extravagance, the one-story type with a minimum basement (where on level land), and the composite two- and one-story type (where on sloping ground), are more elastic and are admirably adapted to the needs of elementary and grammar school pupils. When there are but few classrooms, a visible roof is desirable and not extravagant, and with a limited area there is no need of trick skylights, leak-inviting valleys and other trouble breeders common in northern climates in the large, compact "bungalow" schools which are so favored.

The plan may be developed step by step, once the number of classrooms is determined. Starting with the classroom as the principal unit, then the size of the desks, their number and the uses of the rooms will determine their floor area. Considerations of lighting, economy in framing, and the shape of the building as a whole will fix the width and breadth of the rooms. Next the orientation of the units themselves, that is the direction in which the windows are to face, will be the dominant influence in grouping them into the block plan. The sizes and locations of the windows are as nearly standardized throughout the country as varying local conditions will permit, and in some states definite regulations are in force, as for instance that the clear area of glass shall not be less than one-fifth of the floor area, and that the tops of the windows shall be not more than 8 inches from the ceiling. Experience and logic forbid arched windows in classrooms, and the pupils' eyes are best safeguarded by unilateral light-



West Terrace Schoolhouse, Claremont, N. H.
Brainerd & Leeds, Architects

ing where the windows are all on their left and preferably ranged nearer the back of the room than the front, and there are other like considerations.

Classrooms opening toward the north are not satisfactory, because of the reduced quantity of natural light and because there will be no purifying direct sunshine during the winter. When opening due south they are exposed to too much glare every day and to too much heat at the beginning and at the end of the school term. Classrooms are better faced east or west or, if possible, swung a little to the south. Assembly halls, drawing rooms and offices are none the worse for a northern exposure, but kindergartens in the northern states should have all the sunshine there is, windows on more than one side, and bay windows in addition whenever possible.

In the small, suburban school the danger from fire panic is at a minimum, and the question of fire-proof construction is rather a question of investment and replacement than of safeguarding the lives of pupils. From either point of view, however, the boiler room should be of first class construction, with fire-retardant construction elsewhere in the building. The exterior walls should be of masonry, since the relative costs of masonry and of wood are drawing closer together, and the bill for painting and repairs on wooden walls, to say nothing of the fire risk, will in comparatively few years counterbalance the original saving. Furthermore, the schoolhouse should be an object of pride to the community, and teach unconsciously to the pupils a standard of permanent worth, and brick gives a more monumental impression than clapboards or certain other materials.

In the small schoolhouse, where the architect's fee will barely cover the cost of his services, there is a straight challenge to his professional standards and artistic ability. To the neighbors the little two-room school is as important as a magnificent junior high school is to the large city—perhaps more so, as there are fewer civic buildings for them to be interested in; and there exists less opportunity for them to see architecture at its best. The problem in design is definite, and just because expensive materials and elaboration of detail are beyond the budget, there is all the more stimulus to refine the proportions and to select



Jefferson Schoolhouse, Sacramento, Cal.
Dean & Dean, Architects

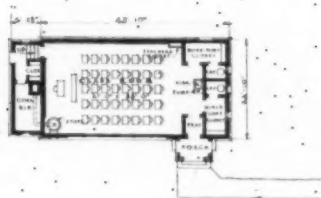
textures and colors carefully so as to produce a diminutive picture of simple, rural quality. Sometimes the funds will permit an informal arrangement with wings and gables. In other cases, where stringent economy demands symmetrical compactness, the prim Colonial buildings of the past, from Virginia to Maine, lend themselves almost intact as models.

The classroom itself must usually be more flexible than in the metropolitan school, where each room has its specialized purpose, and where the large number of pupils allows systematic rotation from laboratory to home room or from domestic science suite to library. In fact the rural pupils must often be placed with two or more grades in one classroom. In this case the accepted standard of 8 feet from the front desks to the wall back of the teacher is too small, since space is needed for a dozen or more pupils to gather between the "home" desks and their teacher for recitation purposes. Alcoves are sometimes added, where small groups may receive instruction in domestic arts, manual training or agriculture, while the teacher supervises a study group at the same time. Every inch of area is important.

The floor space may be profitably enlarged to accommodate movable desks, for then the classroom is still more adaptable to varied uses. Movable furniture is especially desirable where two classrooms are divided by folding doors, so that a hall can be created in which the entire school can be assembled at one time, or for the use of grown-ups out of school hours. Where there are half a dozen classrooms, a separate hall can often be afforded, but it must be designed for many uses. The walls may be of sand lime brick which are a light gray, cost no more than common brick, and do not absorb light. Such a wall is not only self-supporting, but will carry the concentrated loads of the roof trusses. The surface will not be defaced as easily as plaster by games and basketball, and if it does become soiled in time it can be painted over. A 5-foot dado of smooth, buff, face brick or of salt-glazed brick adds little to the expense, improves the appearance of the room, and can be readily washed. A concrete floor, laid over 8 inches of cinders or coarse gravel to safeguard against dampness and covered with



Kensington Schoolhouse, Great Neck, N. Y.
Wesley Sherwood Bessell, Architect



ONE TEACHER SCHOOL
STATE OF DELAWARE

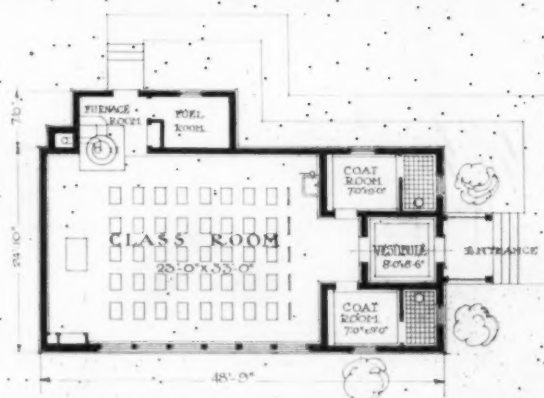
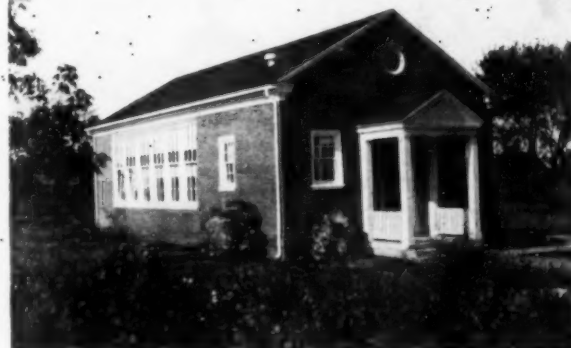
linoleum, gives a clean, quiet surface for gymnasium or auditorium; it is much less expensive, though not so good, as an upper and under floor of wood, laid on screeds over waterproofed concrete.

A small recessed platform raised about 2 feet is needed for assemblies, club meetings and elocution, and this may be extended for dramatics by movable sections of platform and a curtain stretched across the hall. A good sized storage room is needed for portable chairs and floor racks and for athletic and sport equipment. If there is no special room for cooking classes, a small kitchenette for use at lunch time will be found well worth while, and if this adjoins the hall it will be very popular for serving supper at dances, for evening meetings of the Parent-Teachers' Association or the Ladies' Auxiliary. If the hall is so arranged that it can be reached from the outside without opening up the rest of the building, the general utility of the plant will be increased.

Where there are enough pupils to justify the installation of showers and lockers in connection with the gymnasium and playgrounds, it will be a great advantage if these also can be reached and readily supervised without allowing access to the classrooms. The Noonan School at Winchester, Mass., is an example of the adaptation of an academic plant to neighborhood needs. The hall is built for either games or gatherings. At the end opposite the stage are an entrance and corridor which can be shut off from the classrooms. At the center of the outside wall is a direct exit, and back of the stage is the

main door to the kindergarten room. This room is unencumbered by fixed desks, and has its own toilet, so that it can be used as an anteroom for public speakers or as a dressing room for school plays. Off the teachers' room is an alcove with gas stove and sink which is conveniently placed next the hall. The showers for the girls are next to one outside entrance, and those for the boys beside another, and both of them can be used during the summer months by the children. There are a full-sized ball field for the older pupils, and a separate sand-pile and playground for the use of the kindergarten pupils.

Every "schoolhouse expert," whether superintendent, janitor or architect, has his pet theory on what to do with the children's overcoats. There is the wardrobe with counterbalanced doors which slide up or with pivoted doors which slip in, and the wardrobes may be placed in the classrooms or in the corridors, according to the relative needs of control and distribution; there are lockers—and here the battle becomes vigorous over the merits or demerits of keys versus combination locks; there are coat rooms adjoining each classroom (which are expensive on account of requiring floor area), and group coat



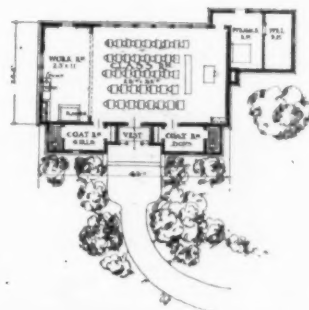
ONE TEACHER SCHOOL
SEAFORD, DELAWARE

GRANT & PHELPS
ARCHITECTS
NEWARK, NEW JERSEY

rooms in the basement (which involve janitor control). But whatever type is selected in the compromise between cost and administration, those for the small country schoolhouse deserve especial study because the pupils come from a greater average distance than in the city, and over muddier walks. Umbrella hooks and drip pans, ventilation and drying equipment for coats, and bins for overshoes are accepted as a matter of course, but foot warmers are now considered unsanitary. The school's location has much to do with it.

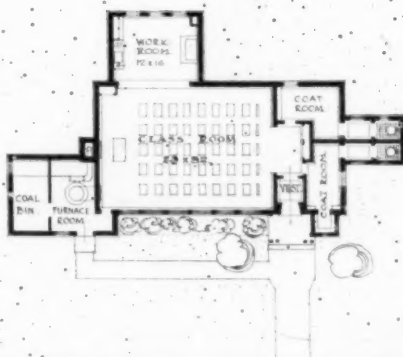
The mechanical equipment often presents special problems; water mains and sewers may be non-existent, the best fuel hard to secure, and the electric service unstable. As one member of a building committee sardonically remarked, when asked if the current was alternating or direct, "I guess you'd call it 'alternating'; two days on and one day off!"

In discussing a one-room school, J. O. Betelle says: "From the standpoint of first cost it was possible, with the funds available, to secure the very best systems of heating, running water for drinking purposes, and the installation of water closets. It was not this first cost, however, that was the deciding



ONE TEACHER SCHOOL
STATE OF DELAWARE

S. VILBERT & BETELLE
ARCHITECTS
NEWARK, N.J.



ONE TEACHER SCHOOL

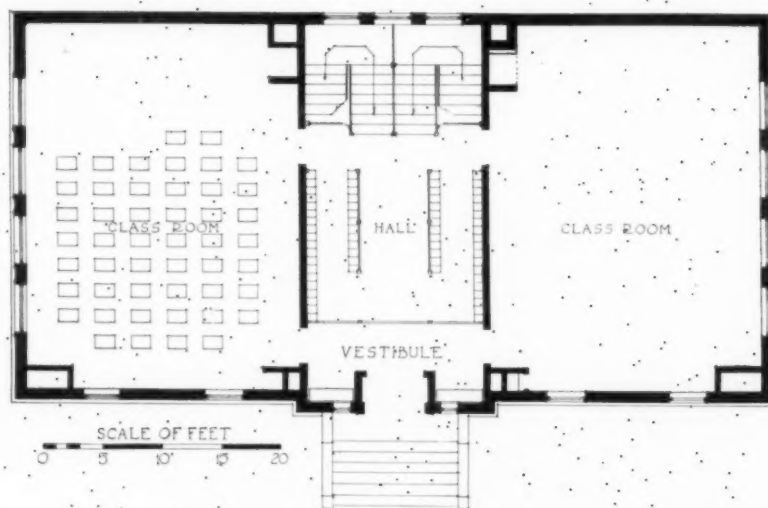
CHRISTINE, DELAWARE

S. VILBERT & BETELLE
ARCHITECTS
NEWARK, N.J.

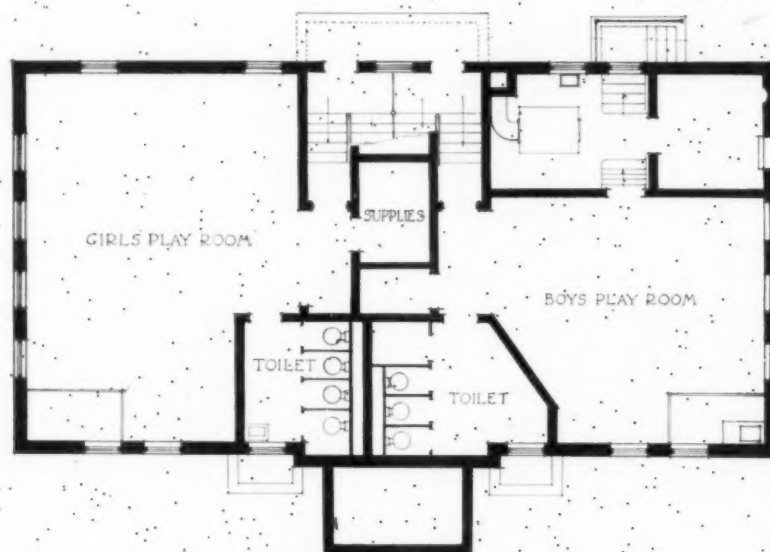
factor, but rather the attention and expense that would have been necessary for proper maintenance after the systems had been installed. It must be realized that these small buildings receive no attention during the holidays, or from Friday until Monday, and that no heat is maintained in the buildings during these periods. Even if it were decided to keep heat up at all times during cold weather, so that running water systems could be installed, heavy snows and impassable roads would often make it impossible to reach the school buildings for days at a time; the freezing up of the plumbing systems would naturally be the result. After much consideration and investigation it was decided to install chemical toilet fixtures inside the building and reached through the coat rooms. For the water supply system it was decided to install a hand pump over a sink in the workroom. The water in the pump will be sufficiently below grade to prevent freezing, and it is in a convenient location for use both for drinking purposes and for instruction purposes in connection with domestic science lessons. For the heating, a jacketed stove located in an alcove, or a furnace placed in a small room outside of the classroom, was decided upon. It is realized that the jacketed stove will heat and ventilate the classroom with considerably less coal than the furnace. It is admitted, however, that the jacketed stove does not give the required 30 cubic feet of air per minute per pupil, but upon the other hand it consumes less fuel. A stove in the classroom, with



FRONT ELEVATION



MAIN FLOOR.



BASEMENT

TOLMAN SCHOOLHOUSE, STOUGHTON, MASS.
CHARLES G. LORING, ARCHITECT



Grade Schoolhouse, Mansfield, Mass.
Ritchie, Parsons & Taylor, Architects



Mystic Schoolhouse, Winchester, Mass.
Ritchie, Parsons & Taylor, Architects

the attending noise, confusion and dust which are caused by the putting in of coal and the removal of ashes, is very much of a handicap to good instruction work. A furnace in a separate room, where the firing and the removal of ashes will not interfere with the classes and which will provide the proper amount of ventilation, will be installed when the community is willing to provide the additional amount of fuel to obtain more satisfactory results."

One example of government standardization applied to mechanical equipment is this table listing the minimum number of toilet fixtures permitted by the State of Massachusetts. The ratio has been established a number of years, and has been proved reasonable and satisfactory in operation:

Pupils	Water Closets		Urinals	Slabs	
	Girls	Boys		Feet	Inches
50	3	2	2	2	8
100	4	3	4	5	4
200	6	4	6	8	0
300	9	6	8	10	8
400	12	8	10	13	4
500	14	9	12	16	0
600	16	10	14	18	8
700	18	11	16	21	4
800	20	12	18	24	0
900	22	13	20	26	8
1,000	24	14	22	29	4

The cost of a proposed small schoolhouse cannot be established by rule of thumb, as it was in the "good old days before the war." Costs per classroom or cost per square foot are but guesswork; and estimating cost per cubic foot is only a slightly better method. For the same set of plans and specifications the bids in North Carolina and in New York might vary 40 per cent. As the construction can be completed so quickly, the time of year plays a greater part than in a large building. Cost per cubic foot is greater in a \$14,000 plant than in a \$400,000 plant of the same grade of materials in the same town. On the other hand, the small building is out in the country and may be built by contractors who work on the job themselves, have no overhead, and are untroubled by union wages, surety bonds, liability insurance and building fees. If a similar

schoolhouse has been put up recently in a neighboring district, the prices on the new plant may turn out to be about the same—and then again they may not. The safer way is to get close approximates from an old fashioned local builder and at the same time from a larger contractor not too far away.

The design of small schoolhouses, despite the ignorance of architectural merit in the country districts, has advanced greatly, due in no small measure to the efforts of the United States Department of Rural Education and to bureaus in many of the states which are eager to help with printed bulletins and with personal advice in individual cases. The progress in Delaware and in California has unusual and interesting features and, occurring on the opposite coasts of the country, indicates the general improvement. Some six years ago in Delaware the realization became acute that the citizens were handicapped by a statewide inferiority in schoolhouses compared to their neighbors in Maryland, Pennsylvania and New Jersey. The buildings were practically all small, from 50 to 100 years old, and unfit. The population was thinly scattered, none too wealthy, and contained many negroes which complicated the situation. A complete renovation was needed, and the outstanding individual in the crusade was Pierre S. du Pont. The laws affecting education and schoolhouses were overhauled and codified to enable the introduction of decent standards, the tangible property was painstakingly appraised, new sites intelligently selected, and new plans scientifically prepared. To assist the investigations before funds had been voted, and then to overcome reactionary objections and to lighten the financial burden, Mr. du Pont gave over two and a half million dollars. The bulk of the donation will be spent in districts which raise their quotas by bonds to the extent of 5 per cent of the assessed values of property. The foremost talent was employed in the investigations, and the results will be of national benefit wherever one- and two-teacher schools (note the classification) of the least expensive form are required. One formula developed relates to the

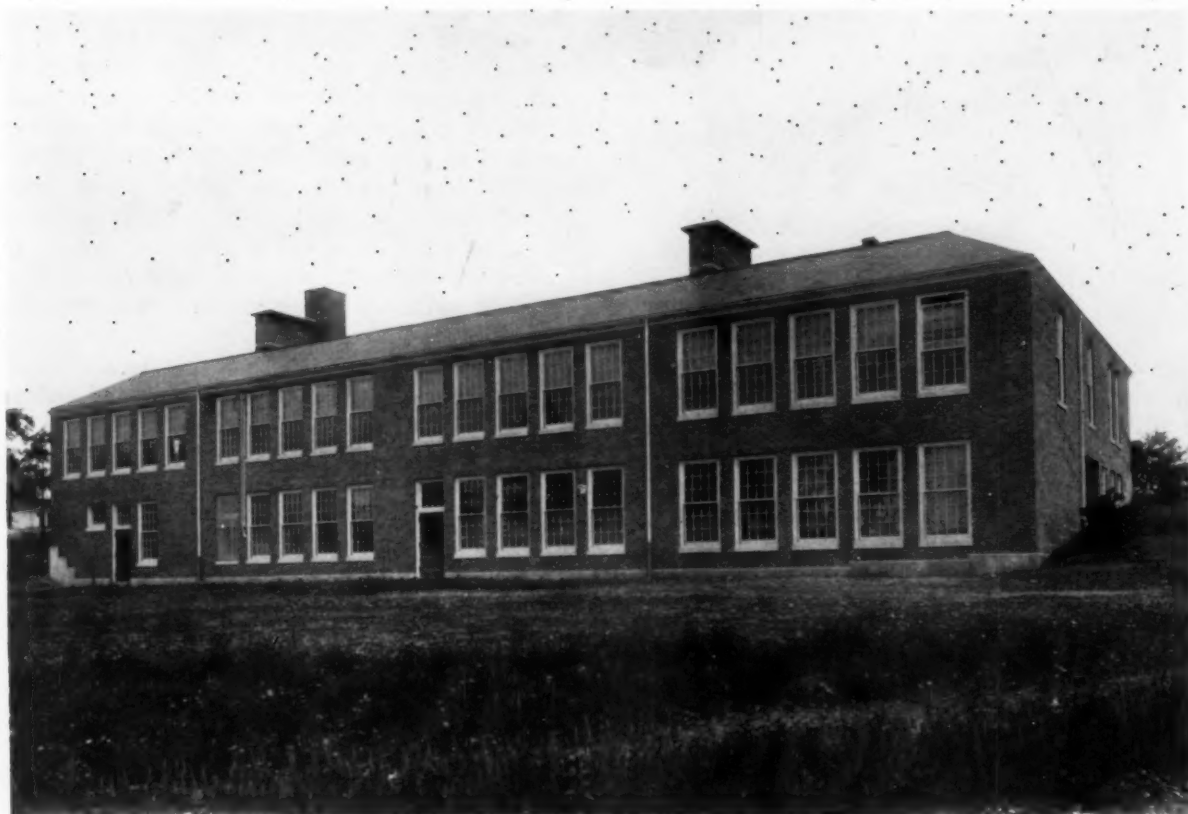
sizes of the lots to be acquired. As the teacher usually has to act also as janitor, the upkeep of the grounds was a serious problem, and so two acres was set as the limit for a one-teacher school, three acres for a two-teacher school, and four acres for larger buildings. The plans for the small schoolhouses are frankly economical rather than ornamental, but despite the fact that wood is generally used for the exterior walls, the various designs which are being experimented with are expressive of the purpose of the buildings, and have charming character.

In California there has been no statewide organized development, but owing to the rapid increase in wealth and the untrammelled mental attitude of the Coast architects, the development of schoolhouse architecture has been both brilliant and original. The state inherited the broad, spreading plan, for the earliest schools were those connected with the Missions and were held in rooms grouped about *patios* and under arcades. The Franciscan Fathers built one-story structures because of the restricted material and scarcity of labor, but unconsciously they chose a form peculiarly adapted to the unknown country in which they settled, for the adobe structures were well suited to the climate and the quite unforeseen earthquake conditions. Years later, after the Spanish influence had waned and the Spanish traditions of design were but poorly understood, there developed a demand for "Mission" architecture, and through lack of knowledge and sympathy some extraordinary monstrosities were perpetrated.

With improved training and understanding, in the principles as well as in the details of design, the fundamental motifs have been retained, but their treatment has been adapted to express the present social and scientific needs.

The distinguishing feature of the small school in California, though by no means all the recent buildings are typical or satisfactory, is the open plan, all on one floor. Where in the East the one-story building is usually rectangular in form, with the circulation limited to interior corridors or a central hallway, the California model tends toward being an elongated mass with wide-flung wings. Arcades take the place of corridors and *patios* of hallways, but these delightful features would be impossible in regions cursed with blizzards and zero weather. The cost of such buildings, as compared to that of the other extreme typified by those being constructed in Delaware, can be judged only relatively or by the comparison of quantity surveys which would eliminate the variable elements, local prices for labor and material, which of course fluctuate constantly.

As education must be general to preserve the strength and insure the survival of our democracy, so must "good architecture" be general, if it is to attain full appreciation and a truly national expression. And insofar as the training in the small schoolhouse is neglected, and insofar as the design of the small schoolhouse is slighted, just so far will the education of all the people and the true understanding of the fine art of building miss full realization.



Rear View, Noonan Schoolhouse, Winchester, Mass.
Charles G. Loring, Architect



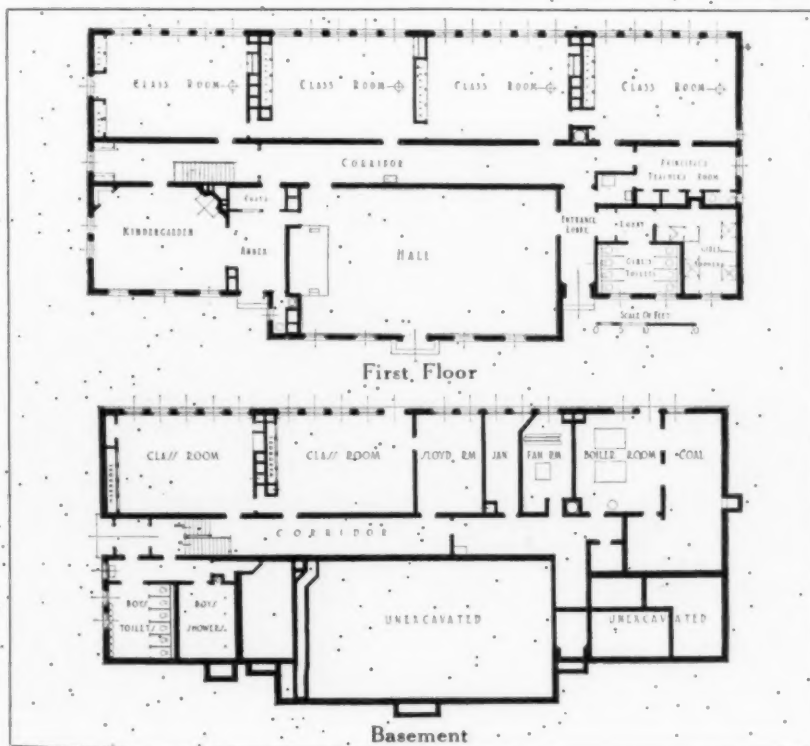
NOONAN SCHOOLHOUSE, WINCHESTER, MASS.

CHARLES G. LORING, ARCHITECT

ONE of the best small schoolhouses completed during the last two years is this at Winchester, Mass. The exterior shows a simple design, executed in the Colonial style, four large and well proportioned windows and a door occupying the center of the front facade of the building. Two low wings

balance and give emphasis to the center portion. Situated on a steeply falling grade, the front of the building is set sufficiently low to necessitate only two steps from the entrance yard to the first floor level, and under the rear of the building on a lower grade is a well lighted basement which contains two standard classrooms, a sloyd room, the boiler, fan, coal, janitor and storage rooms, and the toilets and showers for boys which adjoin the side entrance and can be shut off from the main building during periods when the school is closed.

The main floor contains a hall arranged to seat 270, with stage, entrance lobby and special exit, which can be used independently of the rest of the building; four standard classrooms, each with wardrobe, bookcase and teacher's closet; kindergarten suite composed of the main room, with light on two sides and a fireplace; an annex which can be separated by folding doors, a coat room, toilet, girls' showers, dressing rooms and toilet which can be used independently of the rest of the building for afternoon or summer athletics; principal's office with supply closets, private toilet and utility room with gas stove and sink for the



FORUM SPECIFICATION AND DATA SHEET — 41.

Noonan Schoolhouse, Winchester, Mass.; Charles G. Loring, Architect

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Second class; masonry walls; interior frame construction; boiler room and staircase hall; fireproof.

EXTERIOR MATERIALS:

Red brick; cast stone trim; wooden cornice and door frames.

ROOF:

Slate.

WINDOWS:

Wood, double-hung.

FLOORS:

Maple in all classrooms and corridors on main floor; cement on concrete in basement.

HEATING:

Steam, with gravity type of ventilation.

INTERIOR MILL WORK:

North Carolina pine.

INTERIOR WALL FINISH:

Plaster, painted.

NUMBER OF PUPILS:

245.

APPROXIMATE SQUARE FOOTAGE OF BUILDING:

8,768.

TOTAL COST:

\$82,531.

CONTRACT LET:

October 3, 1923.

preparation of teachers' lunches or suppers in connection with the auditorium when used by the public.

The building is one story high to the east and two stories high to the west, where the grade falls away. It has three entrances at each level, which allows any section of the building to be used independently, and affords the maximum protection against panic. Owing to the fall in the grade, fuel can be dumped into the coal vault from the driveway on the upper level, and the ashes can be removed to the driveway on the lower level below the boiler room floor. The

kindergarten playground lies to the south of the school, and the boys' athletic field on the upper level.

This schoolhouse, although legitimately falling into the class of small schoolhouses, is really considerably larger than might be judged from the one-story front elevation. The rear elevation, which is two full stories in height and extends the entire length of the building, gives the appearance of a much larger schoolhouse than it actually is. The low hip roofs with simple white painted cornices accentuate the excellent Colonial character of the design.



Detail, Noonan Schoolhouse, Winchester, Mass.

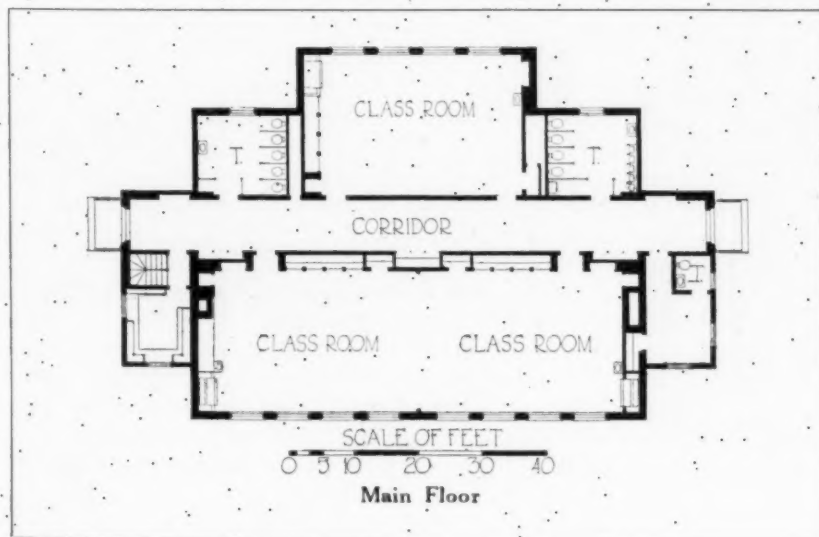


WARD 7 SCHOOLHOUSE, MELROSE, MASS.
CHARLES M. BAKER, ARCHITECT

IN the Ward 7 School at Melrose the architect has succeeded in producing an unusually well proportioned and architecturally attractive small schoolhouse. The exterior walls of the main building are of red Harvard brick, laid herringbone; flat brick arches are used for the window openings, and wood trim, painted white for the window frames, cornices and belfry, while interesting entrance wings on either end of the building are constructed of clapboards, painted white. This combination of wood and brick gives a very pleasant and informal effect to the design. All of the windows are well proportioned

and have small panes of glass. Simple iron railings protect the low steps at the two entrance doors to the schoolhouse. Above these doors pediments formed of flat siding follow the line of the roof at a slightly lower level, and are broken by bull's-eye windows of Colonial design. The well proportioned belfry repeats on the two outer spaces of its base bull's-eyes similar in size and design. These areas instead of showing glass divided by muntins are filled in with louvers, making it possible to utilize the spaces in the base of the belfry or cupola for ventilation purposes. The belfry itself is octagonal in shape, with the tall, thin arches of each side crowned with a bronze-covered mosque-like roof. The scale of this belfry, in comparison with the proportions of the building itself, is unusually successful. Eaves mouldings and longitudinal cornices, made of wood, painted white, further accentuate the Colonial feeling of the design and add to its refinement and dignity.

The simple plan shows a center corridor 8 feet wide, extending from one end of the building to the other, connecting the two entrance doors. At one end of this corridor are located stairs to the cellar and a school supply storage.



FORUM SPECIFICATION AND DATA SHEET — 42

Ward 7 Schoolhouse, Melrose, Mass.; Charles M. Baker, Architect.

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Second class.

EXTERIOR MATERIALS:

Water-struck brick, backed with terra cotta blocks.

ROOF:

Slate.

WINDOWS:

Wood, double-hung.

FLOORS:

Generally pine; terrazzo for toilet rooms; cement in basement.

HEATING:

Steam, thermostatic regulation.

PLUMBING:

Open; enameled iron fixtures.

ELECTRICAL EQUIPMENT:

Lighting; clocks, and fire alarms.

INTERIOR MILL WORK:

Hard pine.

INTERIOR WALL FINISH:

Plaster, covered with burlap in some rooms.

INTERIOR DECORATIVE TREATMENT:

Painted walls; gray stained woodwork.

NUMBER OF CLASSROOMS:

Three, arranged for expansion.

NUMBER OF PUPILS:

120.

APPROXIMATE CUBIC FOOTAGE:

114,285.

COST PER CUBIC FOOT:

42 cents.

YEAR OF COMPLETION:

1924.

room, while at the other end of the corridor is a small teachers' retiring room, with connecting toilet. On the front of the schoolhouse are two classrooms, each 22 feet wide by 32 feet long. Separating these two classrooms is a folding partition, which, when pushed back against the side walls, gives one long classroom, 64 feet in length. Each of these classrooms accommodates 40 pupils, which, together with a classroom similar in size at the rear of the building, provides for 120 pupils. Opening off the main corridor, one on one side of the rear classroom and one on the other, are located a girls' toilet and a boys'

toilet. Each classroom is properly lighted from four good sized windows on one side of the room.

The introduction of long wardrobes 2 feet, 6 inches deep and 12 feet, 6 inches long, provided with shelves and clothes poles for the pupils in each classroom, is a convenient and practical arrangement for taking care of the outer garments of the pupils.

It would be of inestimable value as an incentive to a greater and more fundamental appreciation of good architecture, as well as an incalculable aid in the development of good taste, if every small town throughout the country could boast of at least one schoolhouse, no matter how small, of as good architectural quality as is this Ward 7 Schoolhouse. Unfortunately, most of the schoolhouses, large as well as small, erected during the last quarter of the nineteenth century were abominations as far as convenience of plan, proper sanitary arrangements, adequate ventilation, proper lighting and exterior architectural character were concerned. Beginning with the twentieth century, the study of schoolhouse plan and construction was taken up seriously and conscientiously. The problem was considered entirely from the point of view of the health, welfare, convenience, mental and moral development of the pupils. Because of this continued study and research, American school buildings are today recognized throughout the world as the finest examples of this very specialized type of architecture.

The Ward 7 Schoolhouse in Melrose, in plan as well as exterior design, is an excellent example of a successful small and inexpensive schoolhouse, to the design and plan of which much thought and study have been devoted, with resulting architectural dignity and distinction. The school committees and municipal governments in the smaller cities as well as country towns are universally beginning to appreciate the importance of good school architecture.



Detail, South Entrance



JOHN D. HARDY SCHOOLHOUSE, WELLESLEY, MASS.

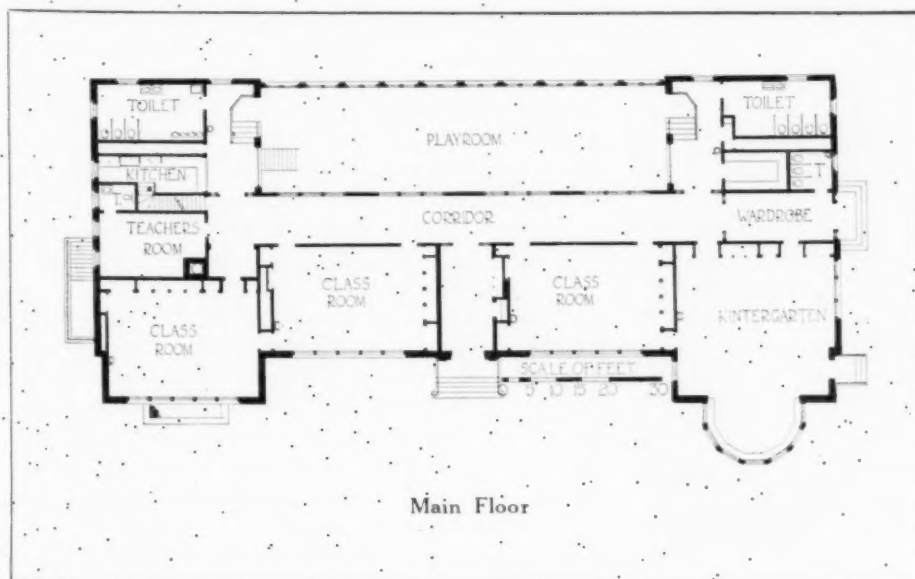
- CHARLES M. BAKER, ARCHITECT

HERE is another interesting schoolhouse, in which there are to be found many of the Colonial details which render the Ward 7 Schoolhouse in Melrose so attractive. The John D. Hardy Schoolhouse is somewhat larger than the Ward 7 building, as it has, besides three more classrooms, a spacious kindergarten room, and at the rear of the school, at

the basement level, two large playrooms, one for boys and another for girls. Each of the classrooms accommodates 40 pupils, which seems to be the maximum number it is wise to place in one room. Each classroom contains a wardrobe, store closet, a book closet and a drinking fountain in its equipment.

The plan shows an entrance hall, leading from the entrance door to the long central corridor. On either side of this corridor are located classrooms, while at one corner of the building there is a large and sunny kindergarten room, with a spacious bay window on the front and a large three-division window on the side. This room is also supplied with closets, book shelves and a drinking fountain; thus adding to its completeness for its purpose.

In the building's elevation, the interior plan is logically and clearly dis-



FORUM SPECIFICATION AND DATA SHEET — 43

John D. Hardy Schoolhouse, Wellesley, Mass.; Charles M. Baker, Architect

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Second class.

EXTERIOR MATERIALS:

Water-struck brick, backed with terra cotta block; wood trim, painted white.

ROOF:

Slate.

WINDOWS:

Wood frames and sash, double-hung.

FLOORS:

Georgia pine.

HEATING:

Steam; thermostatic regulation.

PLUMBING:

Open; enameled iron.

ELECTRICAL EQUIPMENT:

Lighting; clocks; fire alarms.

INTERIOR MILL WORK:

Hard pine.

INTERIOR WALL FINISH:

Plaster, with burlap in some rooms.

INTERIOR DECORATIVE TREATMENT:

Buff painted walls; brown stained woodwork.

NUMBER OF CLASSROOMS:

Three classrooms; one kindergarten, and two playrooms.

NUMBER OF PUPILS:

Approximately 160.

APPROXIMATE CUBIC FOOTAGE OF BUILDING:

185,894.

COST PER CUBIC FOOT:

32 cents.

YEAR OF COMPLETION:

1923.

closed, not only by the grouping of the windows, but by the projection of the two end rooms, one a classroom and the other the kindergarten. The red brick walls, which show quoins to strengthen the corner angles of the building, contrast pleasantly with the white painted wood trim of the window frames, entablature and pediments of the main building and its wings. A belfry of suitable size lends dignity and marks the center of the design. The white-painted pediments of the two end bays, together with

that of the entrance door, pleasantly break the long, horizontal lines of the elevation, as does also the excellently designed and proportioned belfry; which in this case assumes greater architectural importance than is the case in the Ward 7 Schoolhouse. Here the open, octagonal belfry, with its tall, thin arches, stands on a drum of the same shape, which in turn rests on a square platform ornamented with a Colonial balustrade, which shows much refinement of detail. The space below this platform is supplied with round, louver-filled windows which serve as part of the practical ventilation system of the building, the entire system being carefully planned.

The entrance door itself is distinctly Colonial in design, reached by six white marble steps protected on either side by simple iron railings. The detail of the trim of this door also shows strong Colonial influence. Fluted pilasters, on either side support an entablature and pediment; all of which shows that refinement and care have been taken in the detail. Flemish bond for the brickwork is broken at the first floor line by a row of bricks set on end. This same treatment occurs above all of the grouped windows, acting as a sort of brick arch. The two entrance doors, each containing four panels, occupy the lower part of the door opening, while above them is a high but simple transom of glass arranged in small panes. A well designed lantern provides a needed decorative touch at the top of the door.

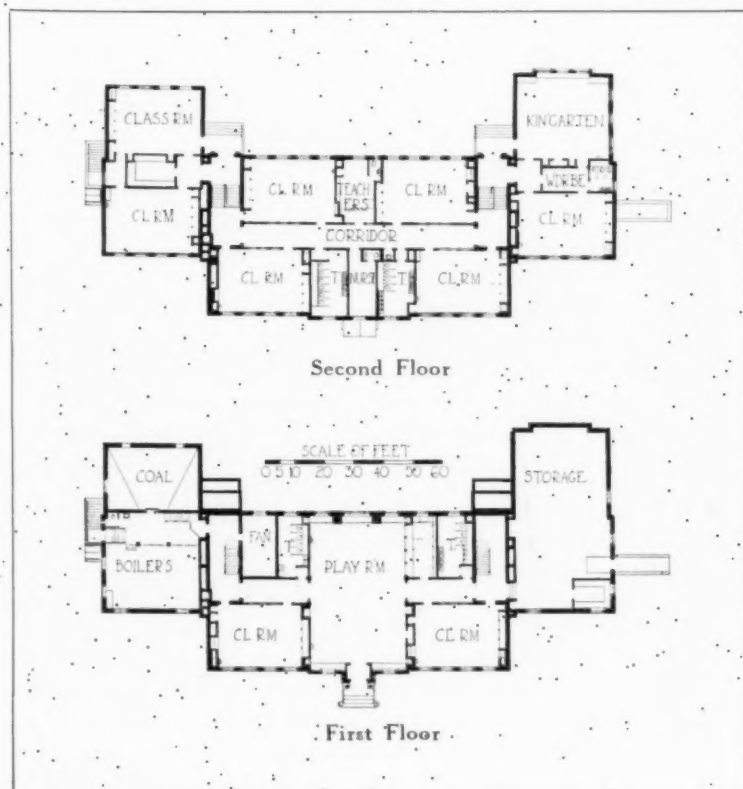
Since this schoolhouse is located on a practically level plot of ground, the greater part of the basement is used only for mechanical equipment purposes, with the exception that at the rear of the basement are located the two large playrooms already referred to. To study this building as a whole, one finds that the relation of the several parts to one another and to the entire design is architecturally very successful. The large wings seem to be in just the right proportion to the longer center section of the schoolhouse.



Detail, Entrance Door and Belfry.



SEAVER STREET SCHOOLHOUSE, WELLESLEY, MASS.
BENJAMIN PROCTOR, JR., AND CHARLES M. BAKER, ASSOCIATED ARCHITECTS



ANOTHER schoolhouse of outstanding excellence, in both design and plan, is the Seaver Street Schoolhouse, completed two years ago at Wellesley, Mass. A two-and-a-half-story building of brick, and a slate-covered roof terminating in a massive chimney at each end are the salient characteristics of this excellent example of the adaptation of Colonial architecture to modern schoolhouses, for which it is well suited. The building has strong, definite architectural character which is unusual.

The basements of the two wings are used in one case for a boiler room and coal bin, and in the other for storage space. The center portion of this lower or entrance floor is occupied by a large playroom, 32 feet, 6 inches wide, by 52 feet long, with windows and window seats at one end, and two windows with window seats and an entrance vestibule at the other. This large center playroom serves also as a place for pupils to congregate before and after school, as corridors lead from it to either end of the building, and it can be readily shut off

FORUM SPECIFICATION AND DATA SHEET — 44

Benjamin Proctor, Jr., and Charles M. Baker, Associated Architects

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Second class.

EXTERIOR MATERIALS:

Water-struck brick, backed with terra cotta blocks; wood trim, painted white.

ROOF:

Slate for sloping roofs; tar and gravel for flat roof.

WINDOWS:

Wood sash and frame, double-hung.

FLOORS:

Georgia pine.

HEATING:

Steam, with central fan system combined.

PLUMBING:

Open; enameled iron fixtures.

ELECTRICAL EQUIPMENT:

Lighting; program bells; clocks and fire alarm.

INTERIOR MILL WORK:

Hard pine.

INTERIOR WALL FINISH:

Plaster and burlap.

NUMBER OF PUPILS:

360.

NUMBER OF ROOMS:

Seven.

APPROXIMATE CUBIC FOOTAGE:

326,000.

COST PER CUBIC FOOT:

37 cents.

YEAR OF COMPLETION:

1923.

from the rest of the building if desired for use outside of school hours, which is frequently convenient.

An interesting feature of the plan, made possible by the rising grade at the rear of the building, is the introduction of double doors opening upon a platform with four steps down to grade from the stairway landing at each end of the building. This makes possible an unusually adequate and efficient method of fire or emergency exit. As seems to be the preferable arrangement today, each of the classrooms as well as the kindergarten is provided with a ward-

robe, storage closet and drinking fountain. In the case of the kindergarten, the wardrobe is a small room; off which opens a toilet for the exclusive use of small children. Every toilet opening off a corridor is provided with an individual entry, the doors into and out of which are supplied with spring hinges so that they are always closed, and due to the arrangement of the small entrance, no view into the toilet room from the corridor is possible. Janitor's closets, as well as space for ample ventilating flues, are provided in the walls of every room.

As is the case with the Ward 7 Schoolhouse at Melrose and the John D. Hardy School at Wellesley, the exterior architecture of the Seaver Street Schoolhouse clearly and successfully indicates the interior plan. Large, well proportioned windows, happily divided into small panes, mark the locations of the various classrooms. The center of the main section of the building is broken by a bay containing a very attractive Colonial entrance porch, at either side of and above which are located well proportioned windows. This center bay is crowned with a pediment, at the center of which is a round Colonial window. The modillion cornice which decorates the eaves line of the front and rear facades of the building breaks around the center bay and continues up the rake of the pediment. A well designed cupola in the Colonial style located at the middle of the ridge-pole of the roof adds interest and dignity.

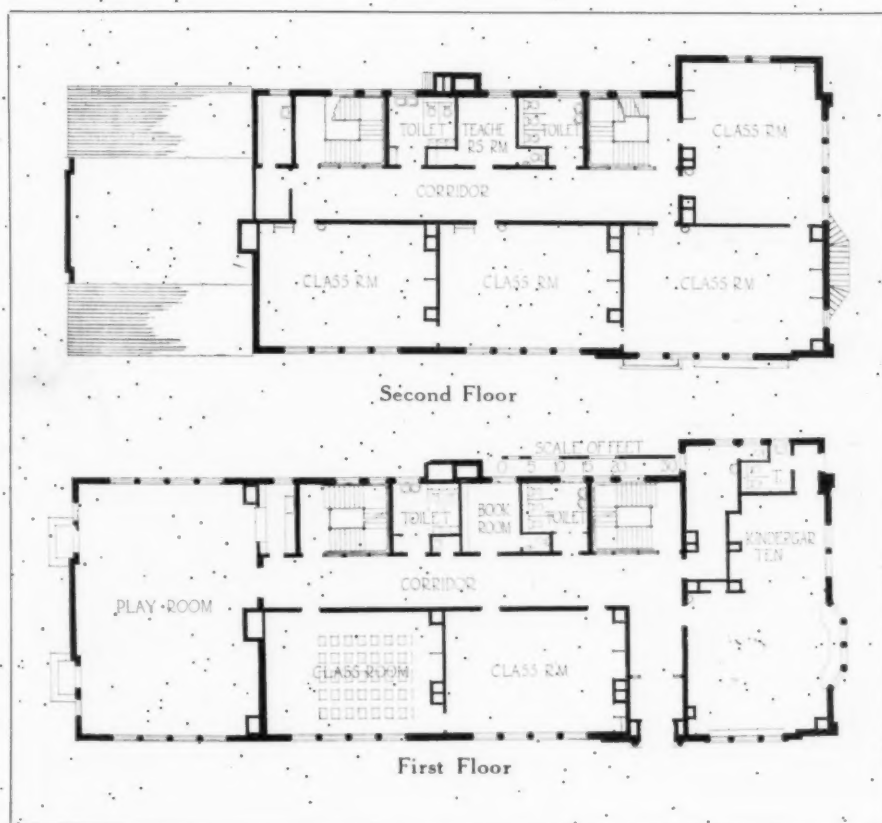
Across the front and back of the top of the roof, long balustrades of simple Colonial design connect the great chimneys at the ends, serving to emphasize the horizontal lines of the roof and eaves. The small, one-story wings at the ends of the building are sufficiently low to add to rather than detract from the effect of the whole design; in fact they accentuate the dominant character of the main portion of the building by considerably extending the area of the structure and materially enhancing its dignity.



Detail, Entrance Door



SHELDON L. BROWN SCHOOLHOUSE, WELLESLEY, MASS.
BRAINERD & LEEDS, ARCHITECTS



THIS seven-room schoolhouse at Wellesley, Mass., strikes a somewhat different note from the usual type of small-schoolhouse architecture. The style used here is a simple adaptation of the English Renaissance or of the period often known as that of William and Mary, with certain characteristics suggesting an earlier style. The informality of the design, the several large chimneys, and long roof lines, broken at one end by a projecting bay on the east where the grade falls sharply away, all help to add to the pleasant, informal, almost picturesque character of the design of this building. The groups of three and four windows successfully indicate the interior plan of the schoolhouse.

FORUM SPECIFICATION AND DATA SHEET — 45

Sheldon L. Brown Schoolhouse, Wellesley, Mass.; Brainerd & Leeds, Architects

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Boiler room, all the first floor corridors, stair-halls and stairways, toilets and offices on second floor are first class; balance of construction, second class.

EXTERIOR MATERIALS:

Water-struck brick, with cast stone trimmings.

ROOF:

Slate.

WINDOWS:

Steel frames and sashes.

FLOORS:

In kindergarten, cork; in portion of building employing first-class construction, concrete covered with a prepared flooring; elsewhere, wood joist floors, covered with maple.

HEATING:

Gravitated steam; split system.

PLUMBING:

Vitreous ware.

ELECTRICAL EQUIPMENT:

Lighting; clocks; telephone; fire alarm; program and yard bells.

INTERIOR MILL WORK:

North Carolina pine.

INTERIOR WALLS:

Hard plaster.

INTERIOR DECORATIVE TREATMENT:

Painted walls; stained woodwork.

NUMBER OF ROOMS:

Two kindergarten, six classrooms.

NUMBER OF PUPILS:

50 in kindergarten; 35 each in five of the classrooms; 40 in one of the classrooms. Total, 265.

APPROXIMATE CUBIC FOOTAGE:

214,000.

COST PER CUBIC FOOT:

41 $\frac{3}{4}$ cents.

DATE OF COMPLETION:

November, 1924.

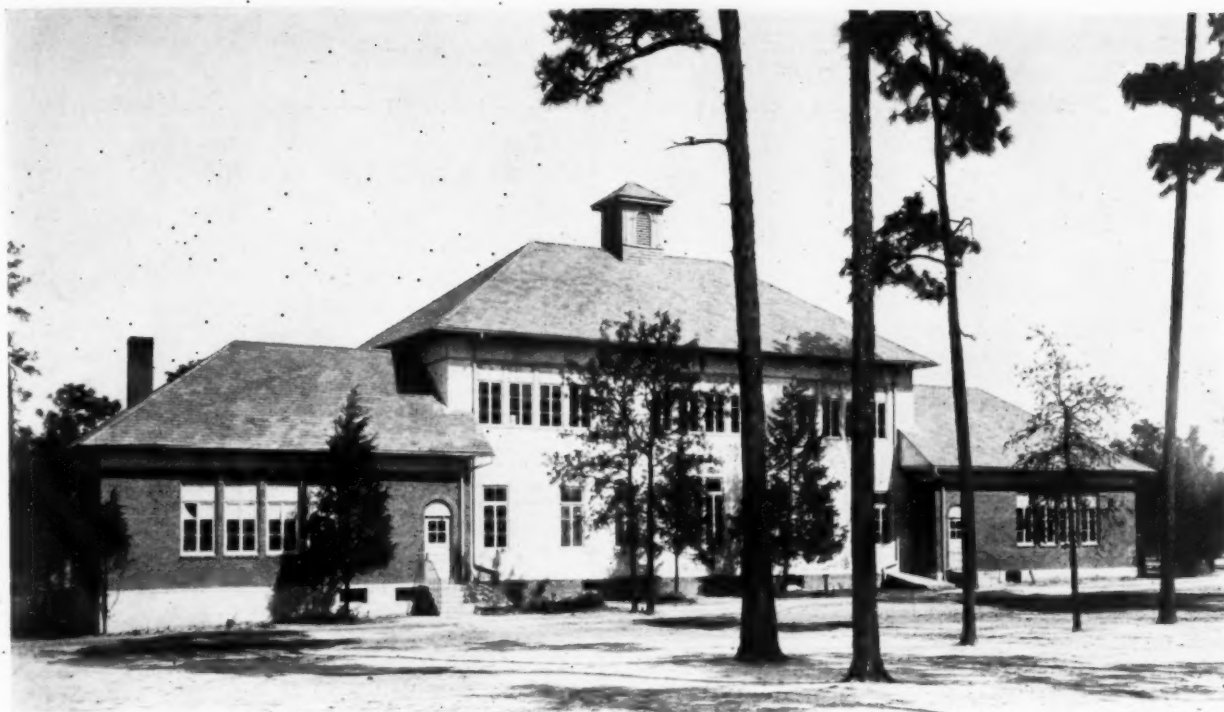
On the entrance floor are located a large playroom, two classrooms, two kindergarten rooms, with separate entrances and toilet rooms. There are also a nurse's room with individual toilet, a book room, two fireproof stairways, and toilet rooms for both girls and boys. Off the playroom is a small serving room or kitchenette, for preparing simple luncheons.

The second floor contains four classrooms with a teachers' room and individual toilet, and toilet rooms for both girls and boys. A large portion of the

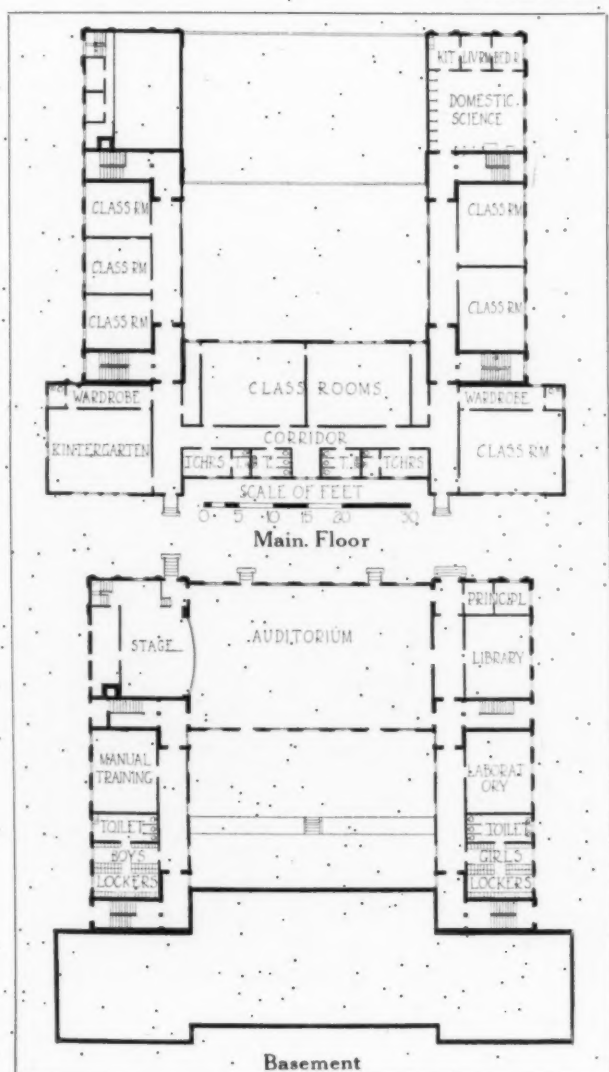
front part of the basement of the building is unexcavated. Due to the sharp fall in the grade on which the school is located, the boiler room, ventilating equipment room, storage space and bicycle room for boys are all located in the basement at the rear of the building. Also, the two fireproof stair-halls and stairways continue down to this floor, where they open out directly onto the yard behind the schoolhouse. The terra cotta detail of the entrance door and grouped windows contrasts well with the brick.



Rear View, Sheldon L. Brown Schoolhouse, Wellesley, Mass.



SCHOOLHOUSE, SOUTHERN PINES, N. C.
AYMAR EMBURY II, ARCHITECT



ALTHOUGH this schoolhouse at Southern Pines was an inexpensive building to erect, architecturally it has considerable distinction and originality. The use of brick veneer for the two one-story wings, and of stucco on wire lath for the center or main portion of the building, produces a pleasing contrast in the materials used. The fairly high hip roofs provide adequate air spaces above the various classrooms, and make possible the ventilating system which operates through the square cupola with louver-filled arches on the roof of the main building.

The plan is laid out around four sides of a hollow square or interior courtyard. On account of the drop in the grade, it was possible to place a good sized auditorium with stage and dressing rooms across the rear of the building on the ground floor level. This auditorium is provided with four exit doors opening directly onto the school yard behind the building. On this basement floor are also located the principal's room, a library, laboratory, toilet and locker rooms for boys and girls, one on one side of the building, and one on the other, a manual training room, and fireproof stairways which lead to the first floor. The first or principal floor, directly accessible from the front of the building, which is on the higher grade of the lot, has an entrance on each side, which connects with long corridors extending down each wing of the building and across the center. On this floor are located five recitation rooms, a domestic science room, in connection with which are a kitchen, living room and bedroom for demonstration purposes, a grade classroom and kindergarten room, located respectively at either front corner of the building, and two teachers' rooms, and toilet rooms for boys and girls. As usual, the kindergarten is provided with

FORUM SPECIFICATION AND DATA SHEET — 46

Southern Pines Schoolhouse, Southern Pines, N. C.; Aymar Embury II, Architect

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Second class.

EXTERIOR MATERIALS:

Wood frame, brick veneer and stucco on wire lathing.

ROOF:

Slate.

WINDOWS:

Wood; double-hung.

FLOORS:

Maple throughout.

HEATING:

Steam; vacuum system; thermostatic regulation.

ELECTRICAL EQUIPMENT:

Lighting and bells; ventilating installation in connection with heating system.

INTERIOR MILL WORK:

North Carolina pine.

INTERIOR WALLS:

Hard plaster.

INTERIOR DECORATIVE TREATMENT:

Trim, mouldings and cornices; plaster walls painted throughout.

separate entrance, wardrobe room and toilet. The provision of five small recitation rooms is one of the unusual characteristics of this plan, which adds materially to the school's flexibility.

The window treatment is particularly interesting, due to the fact that all windows are double case-

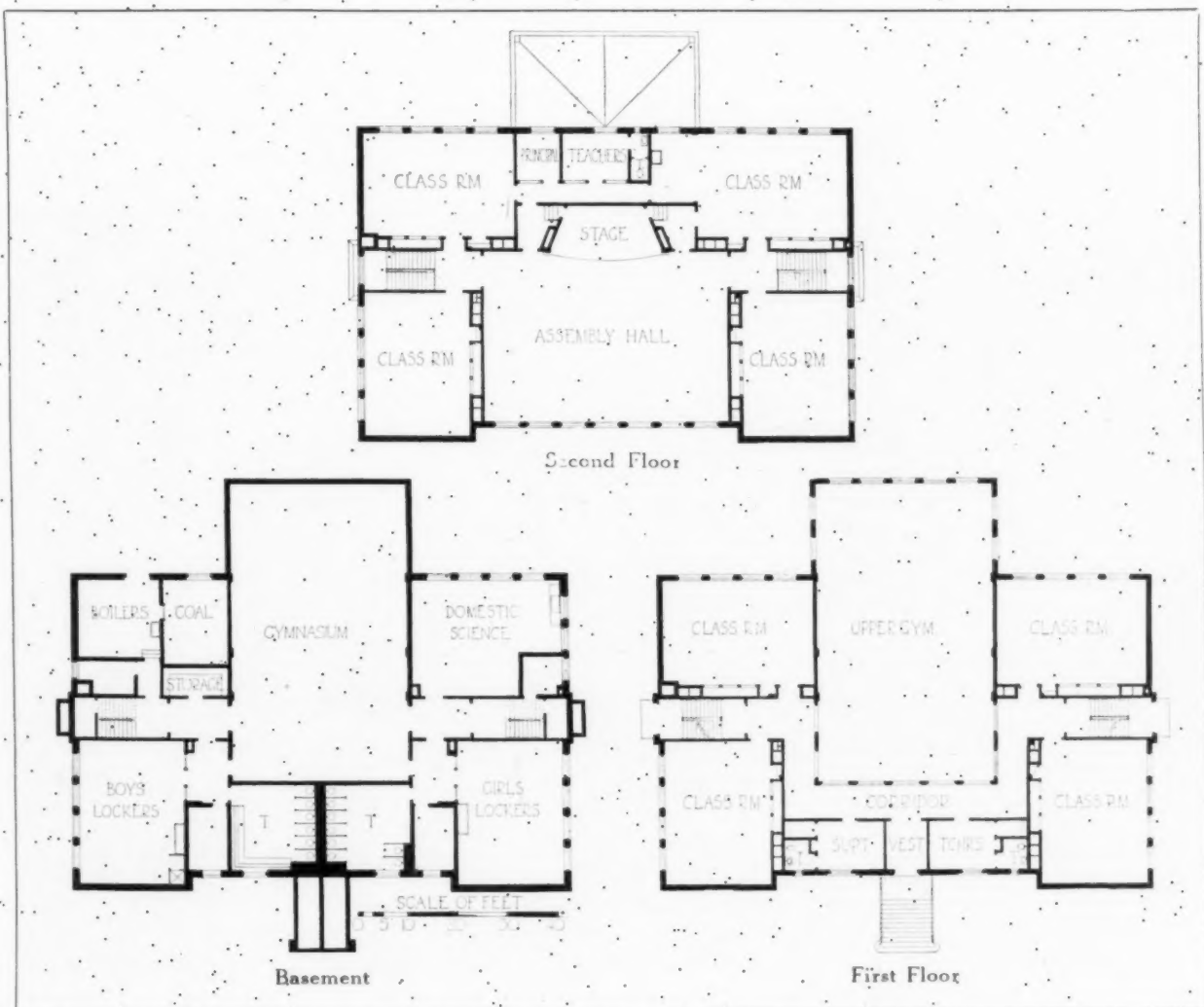
ments, opening out, with transom windows above. It is possible in winter weather, when the thermometer drops down to around 50, as it does even in this climate, to procure good circulation of air through the schoolrooms by this type of window transom and the ventilating ducts located in each of these rooms.



Detail, Schoolhouse, Southern Pines, N. C.



HIGH SCHOOL BUILDING, KENNEBUNK, ME.
HUTCHINS & FRENCH, ARCHITECTS



FORUM SPECIFICATION AND DATA SHEET—47

High School Building, Kennebunk, Me.; Hutchins & French, Architects

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Second class; masonry walls, stud and wood framing; fireproof stairways and stair halls.

EXTERIOR WALLS:

Red brick; limestone trimmings.

ROOF:

Tar and gravel.

WINDOWS:

Wood, double-hung.

FLOORS:

Maple in classrooms, gymnasium and assembly hall; terrazzo in all toilet and locker rooms.

HEATING:

Steam, with gravity type of ventilation.

INTERIOR MILL WORK:

North Carolina pine.

INTERIOR WALLS:

Plaster, painted.

NUMBER OF PUPILS:

320.

NUMBER OF CLASSROOMS:

Eight.

APPROXIMATE CUBIC FOOTAGE:

270,000.

COST PER CUBIC FOOT:

29 cents.

COST PER SEAT:

Approximately \$236.

YEAR OF COMPLETION:

1922.

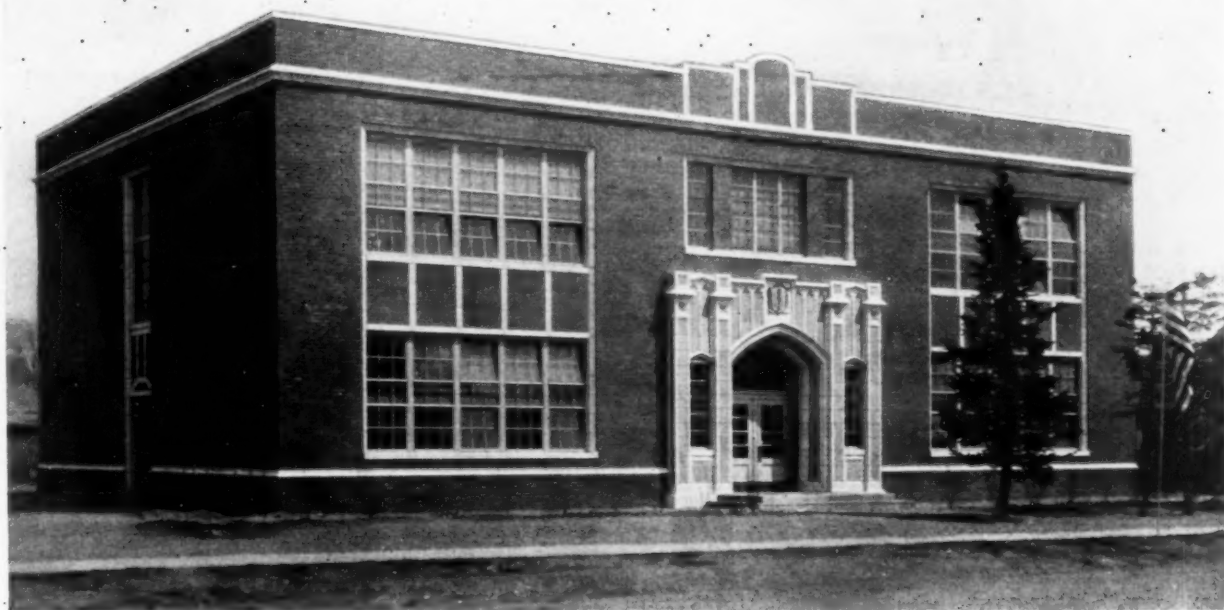
ALTHOUGH completed three years ago, this simple, well balanced design in the Colonial style is one of the best examples of the moderate sized schoolhouse to be found in New England. The plan is compact, convenient and practical. Accommodating 320 pupils, this school building contains all of the equipment needed for a small high school in a town the size of Kennebunk. Entering by a flight of steps to a door in the middle of the front facade, the first floor is reached, sufficiently high above the

grade level to permit good sized windows to light the basement below. In this basement is located a large gymnasium, which extends up through two stories, with high windows which come on a level with the other windows of the first floor.

At each corner of the first floor is located a classroom, each accommodating 40 pupils. A superintendent's office and a teachers' room, each with separate toilet and closet, are located at the sides of the entrance vestibule on this floor of the building.



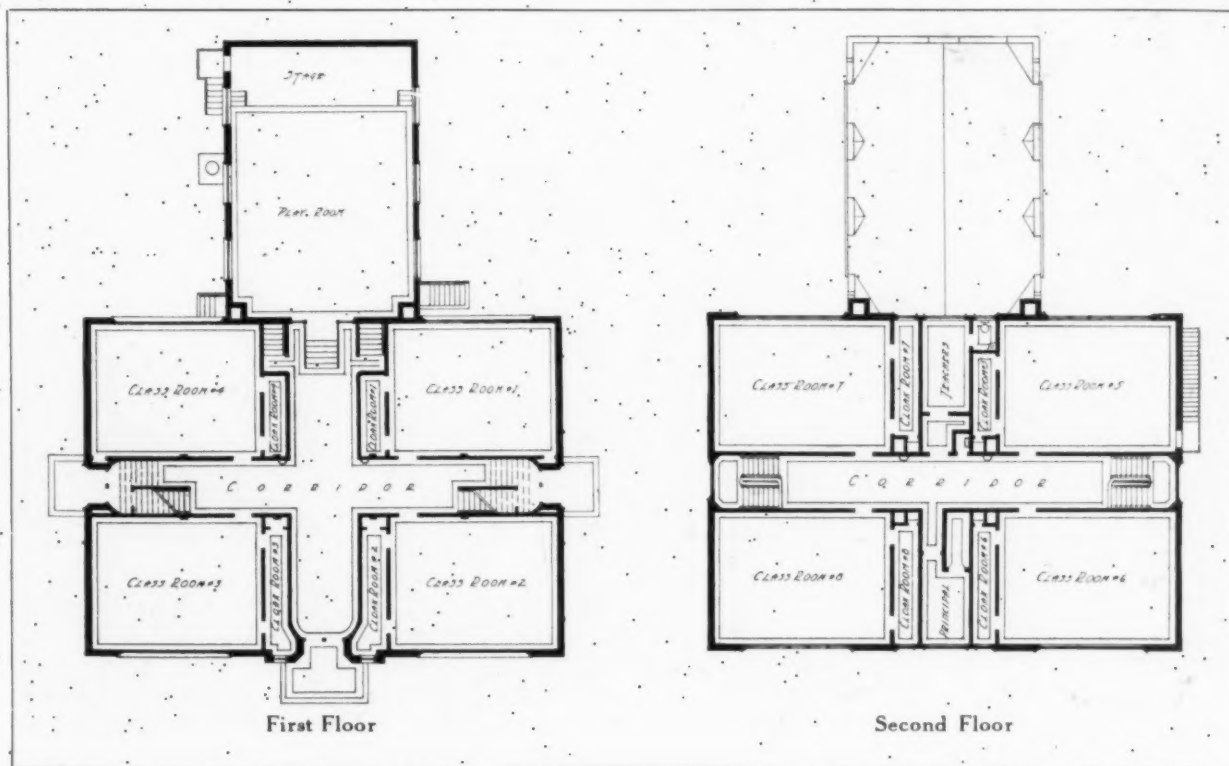
Detail, Entrance Front, High School, Kennebunk, Me.



WHITING SCHOOLHOUSE, LARAMIE, WYO.
WILBUR A. HITCHCOCK, ARCHITECT

FROM the Middle West have come illustrations and plans of a simple but well designed schoolhouse of eight classrooms, accommodating 40 pupils each, making a total of 320. The plan of the building is logically expressed by the wall treatment of the exterior. Panels of windows on both first and second floors break the front facade on either side of an entrance doorway, emphasized by a terra cotta

enframement carried out in simple Gothic detail. Above this entrance an oblong group of windows on the second floor carries the treatment of the building up to a terra cotta string course, above which is a brick parapet broken into panels at the center. Each end of the building shows paneled wall surfaces, indicating the blank walls in the schoolrooms, and a vertical center treatment of entrance



FORUM SPECIFICATION AND DATA SHEET — 48

Whiting School, Laramie, Wyo.; Wilbur A. Hitchcock, Architect

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Face brick and hollow tile; steel columns and girders; reinforced "hollow pan" concrete floor construction; block partitions.

EXTERIOR WALLS:

Brown face brick; terra cotta trim (ivory with variegated blue background).

ROOF:

Built-up asbestos roofing.

WINDOWS:

Steel frames and sash.

FLOORS:

Clear white maple, laid on sleepers over concrete construction.

HEATING:

Steam.

PLUMBING:

Enameled iron.

ELECTRICAL EQUIPMENT:

Conduit installation of wiring; commercial type fixtures.

INTERIOR MILL WORK:

Sawed red oak; metal casings used on all doors and windows.

INTERIOR WALLS:

Smooth plaster.

NUMBER OF PUPILS:

320.

NUMBER OF CLASSROOMS:

Eight.

APPROXIMATE CUBIC FOOTAGE:

195,600.

COST PER CUBIC FOOT:

About 28 cents without furniture, or \$172 per pupil.

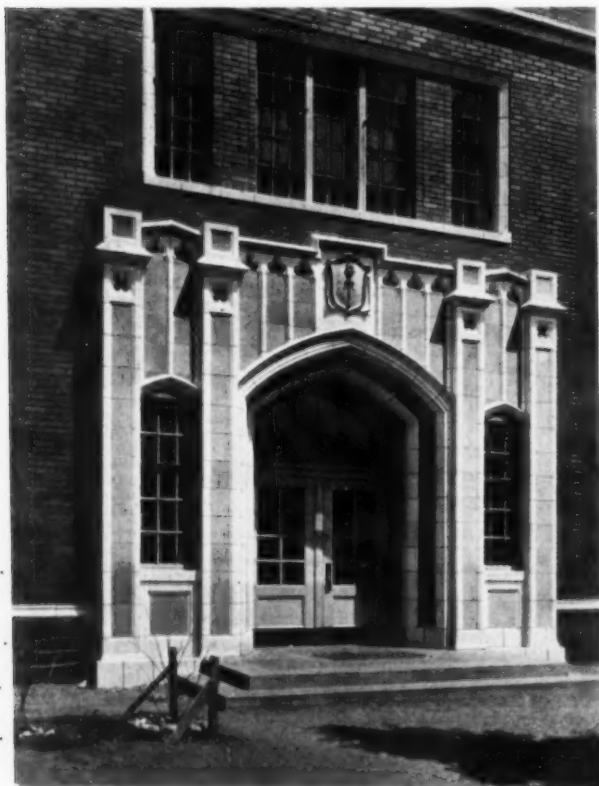
DATE OF COMPLETION:

March, 1925.

door at grade level with high windows above, which light the stairways at either end of a long corridor.

The plan is as straightforward and direct as are the exterior elevations. Two stories in height, the first or entrance floor is divided into four parts by center and longitudinal corridors. Each of the four parts thus divided is occupied by a classroom with individual coat room. The center corridor leads through the building to a large story-and-a-half playroom or auditorium at the rear. This room has

a stage at the rear end. On the second floor there are four classrooms in positions similar to those on the first floor. Here also are located a principal's room and a teachers' room with individual toilet. As the ground under the front portion of the building is not excavated, the boiler room, space for coal storage, and toilets for boys and girls are located under the auditorium or playroom at the rear of the building. These two toilets are accessible by stairs from both the outside of the building and from inside.



Detail, Main Entrance



A Typical Schoolroom

INTERIOR ARCHITECTURE

Small Salon, Hotel Gouthiere, Paris

WITH DRAWINGS BY C. HAMILTON PRESTON

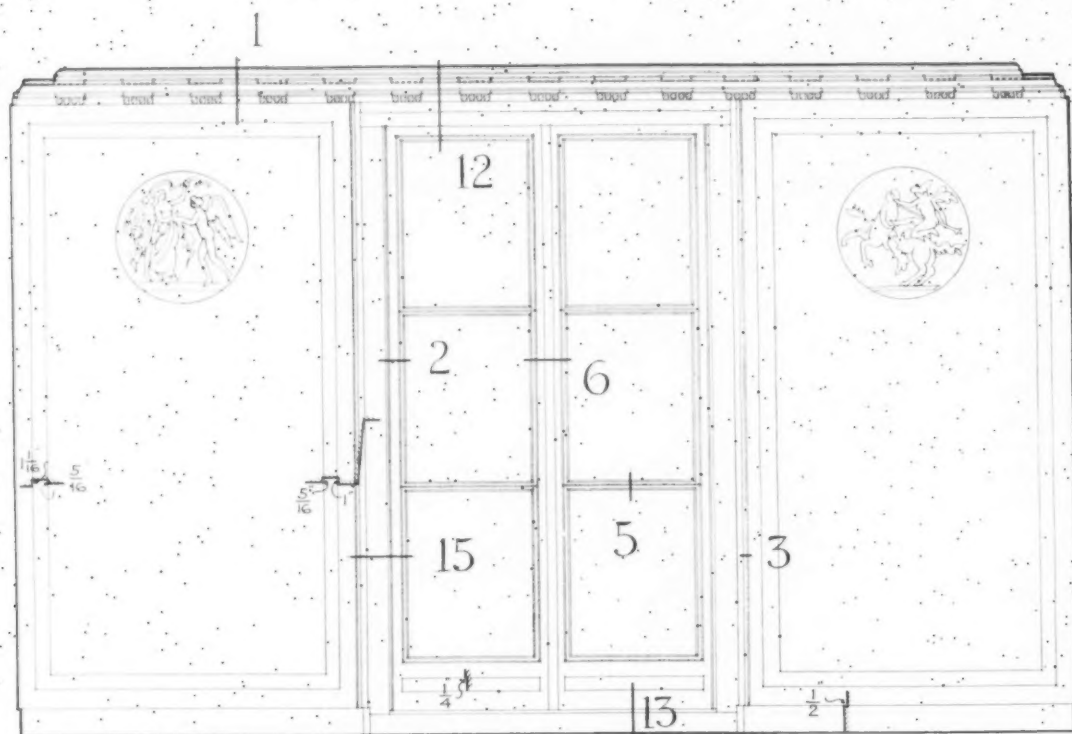
IN an article published in THE ARCHITECTURAL FORUM of March, 1924, the Hotel Gouthiere in Paris was described at some length, accompanied by detailed drawings and illustrations of the entrance vestibule and the little salon, of which Mr. Preston has since made very complete and accurate detail drawings which appear on these pages. In THE FORUM of last December were published measured details of the charming little library in this same famous small hotel, also measured and drawn by Mr. Preston. It is a pleasure to show in this issue further details of this exquisite piece of Louis XVI and Directoire architecture.

This small salon shows great delicacy, refinement and reserve in the treatment and handling of its architectural details. The Classic influence is easily recognized in the low cornice with its mutules and guttae. Although the room is small, the decorations and mouldings are in such perfect scale that an appearance of greater size is obtained. This room might well be actually copied or taken as the inspiration for a small reception room or salon in any American apartment or country house. Unfortunately, com-

plete and delightful as are the detailed drawings, no idea of the charming color treatment of this small room may be obtained from illustrations. Mr. Preston provides the information that the baseboard is painted to imitate soft, red marble; the walls and trim are painted a rich yellow, the wall panels being marbleized. The doors are painted a gray-green, the ceilings a deep cream, and the floor is stained a dark brown and waxed. The finishing touch of color, most important of all, is the delightful blue used for the four interesting medallions set into the upper part of each of the high wall panels. It is hoped that from this suggestion of the colorful treatment of this room it may be possible to visualize something of the charm of this unusual small interior. The use of color, particularly when marbleized, is constantly growing in popularity, not only among the leading decorators, but among architects who enjoy and appreciate color in architecture. Not only is color now used to a great extent in the finish of walls and woodwork, but even on the exterior of buildings where very successful effects are produced through use of color in terra cotta and brickwork.

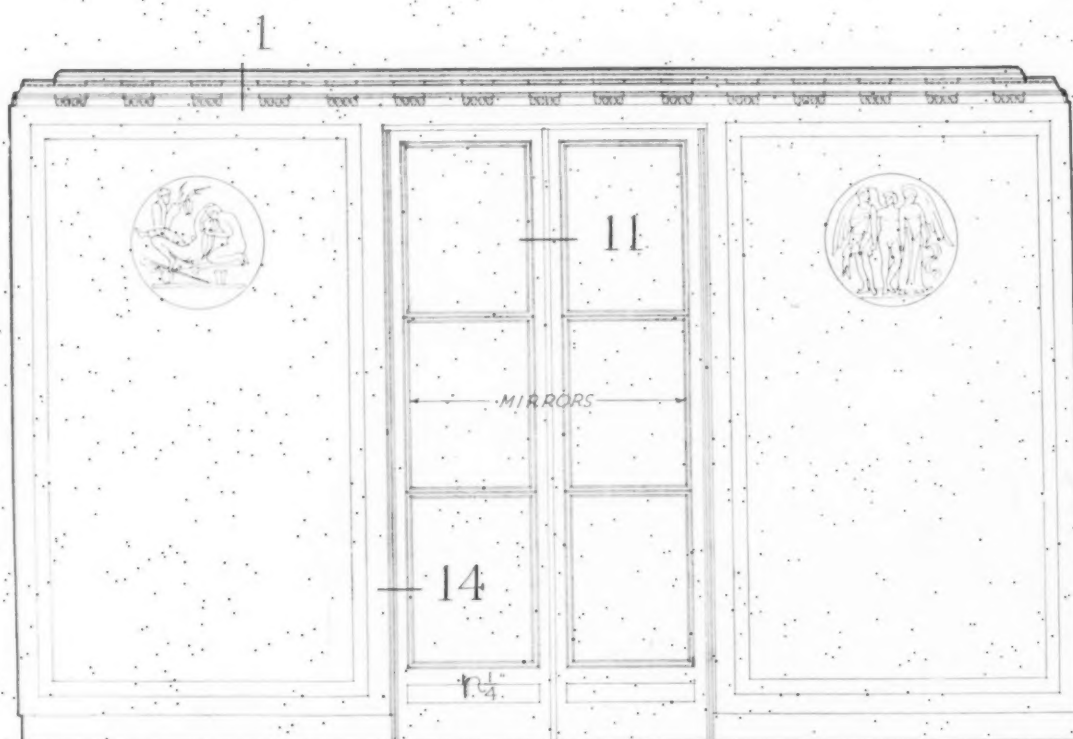


Refinement and Restraint Characterize the Details.



ELEVATION C~C

Scale $\frac{3}{8}'' = 1 \text{ Foot}$

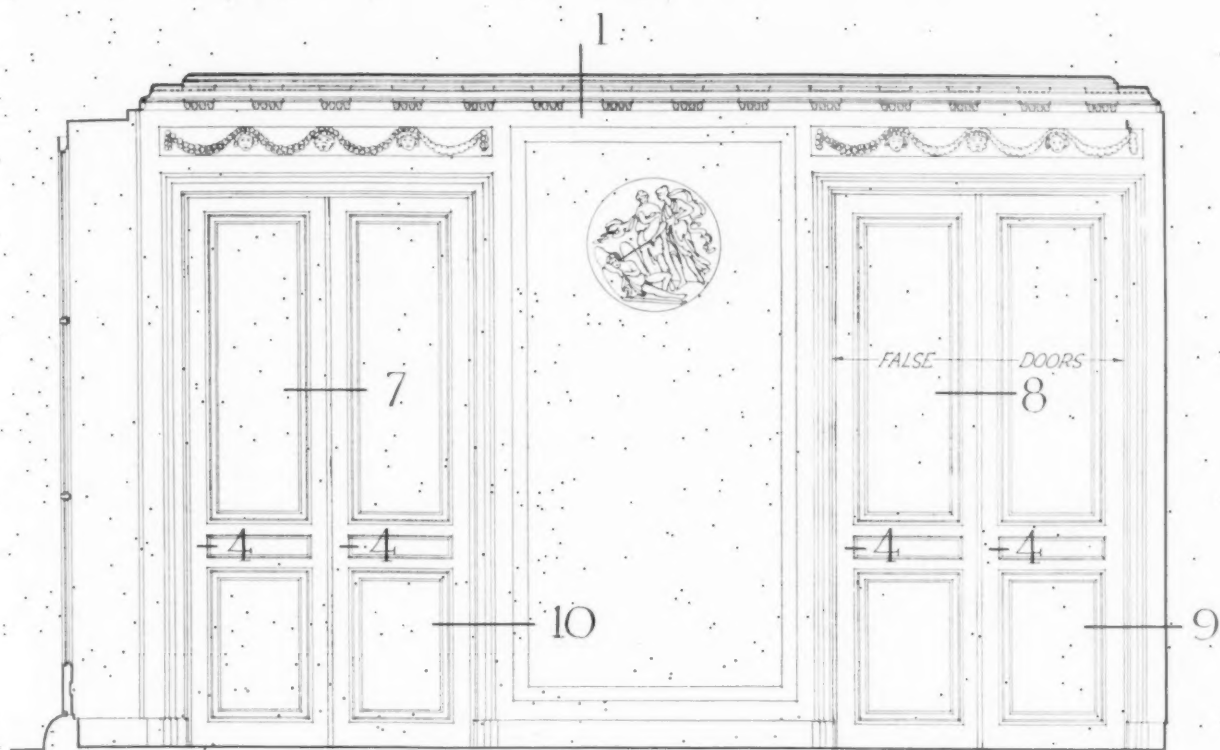


ELEVATION D~D

SALON

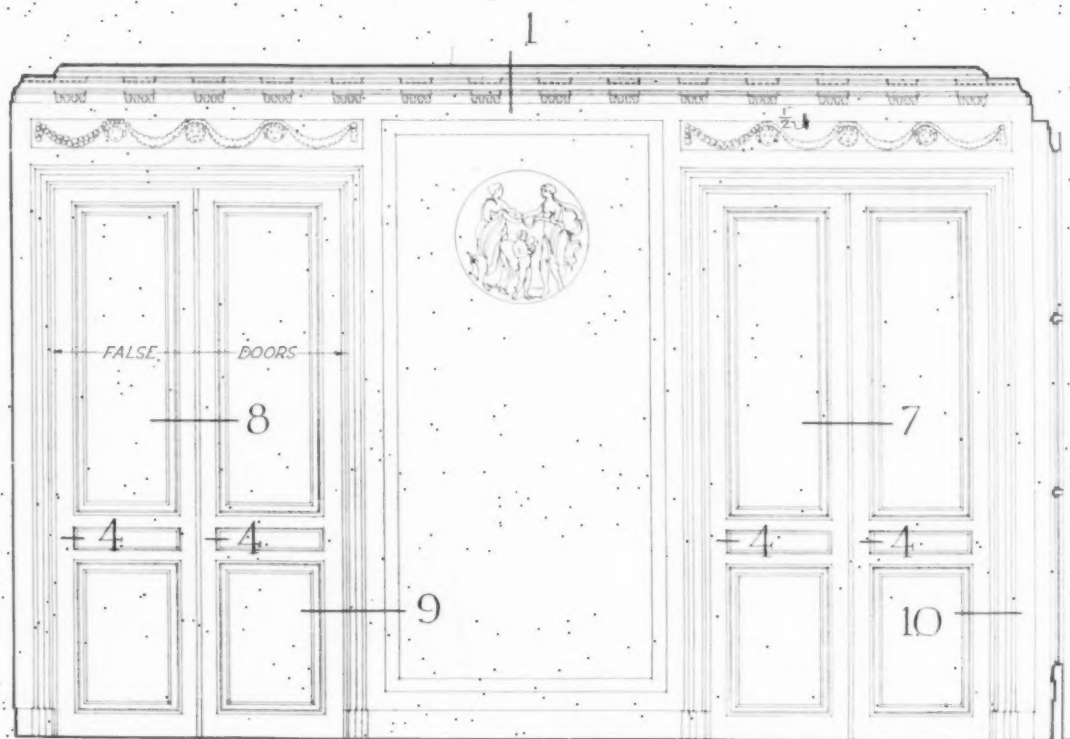
HOTEL GOUTHIERE

PARIS



ELEVATION A~A

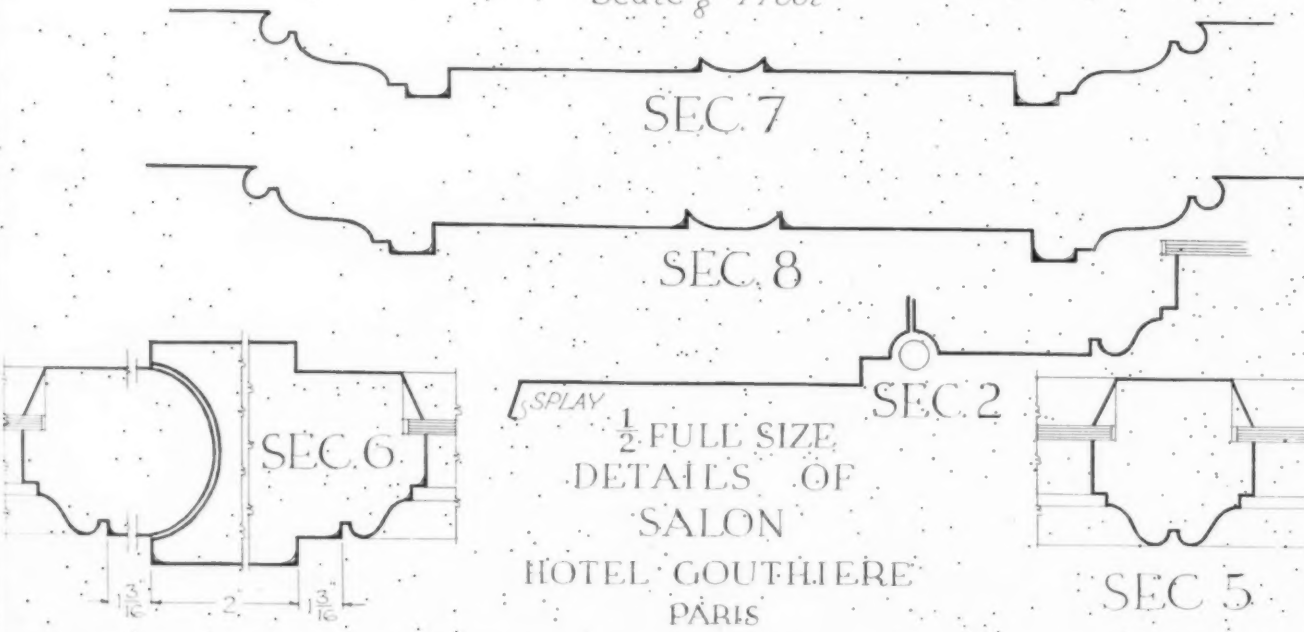
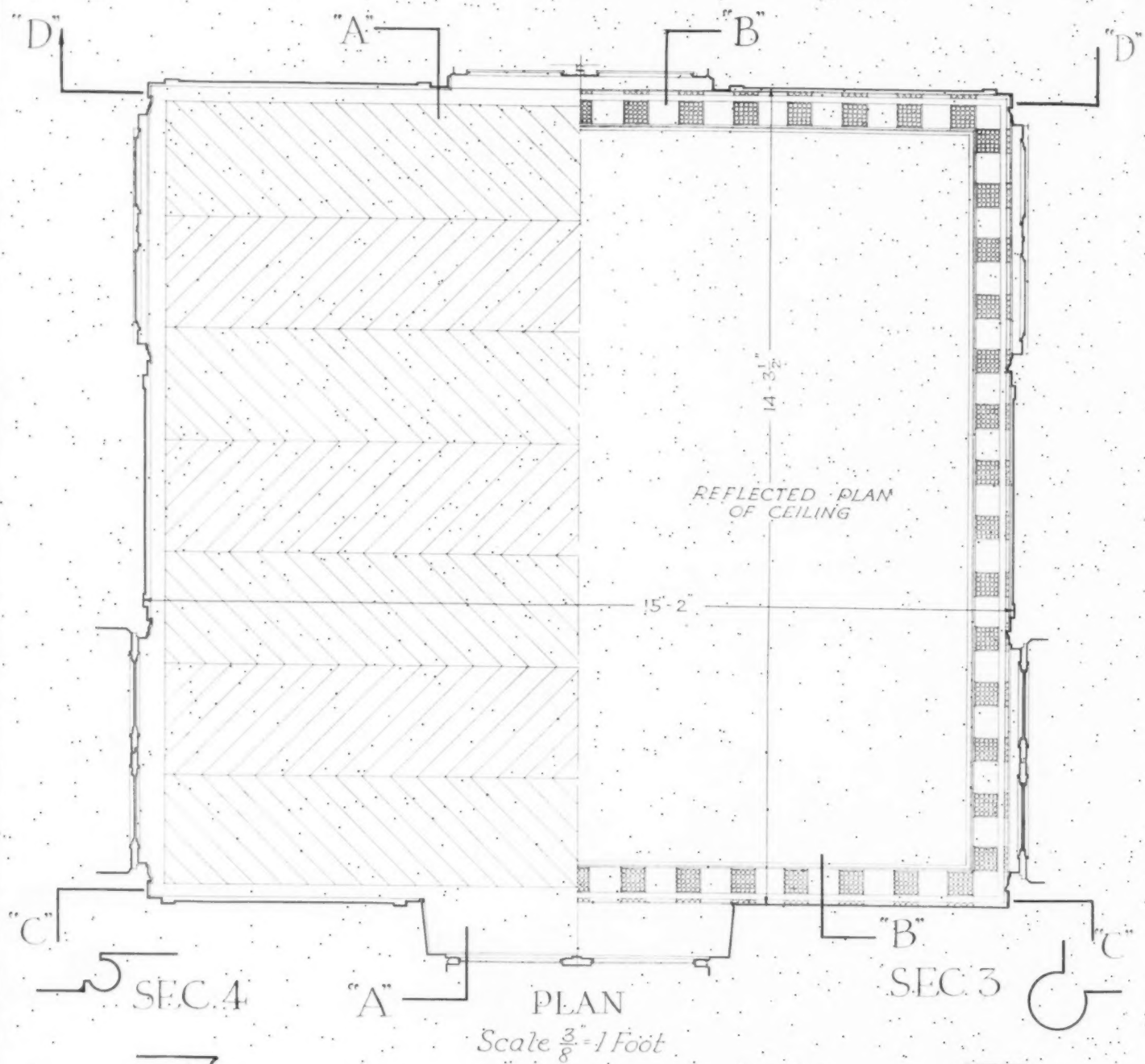
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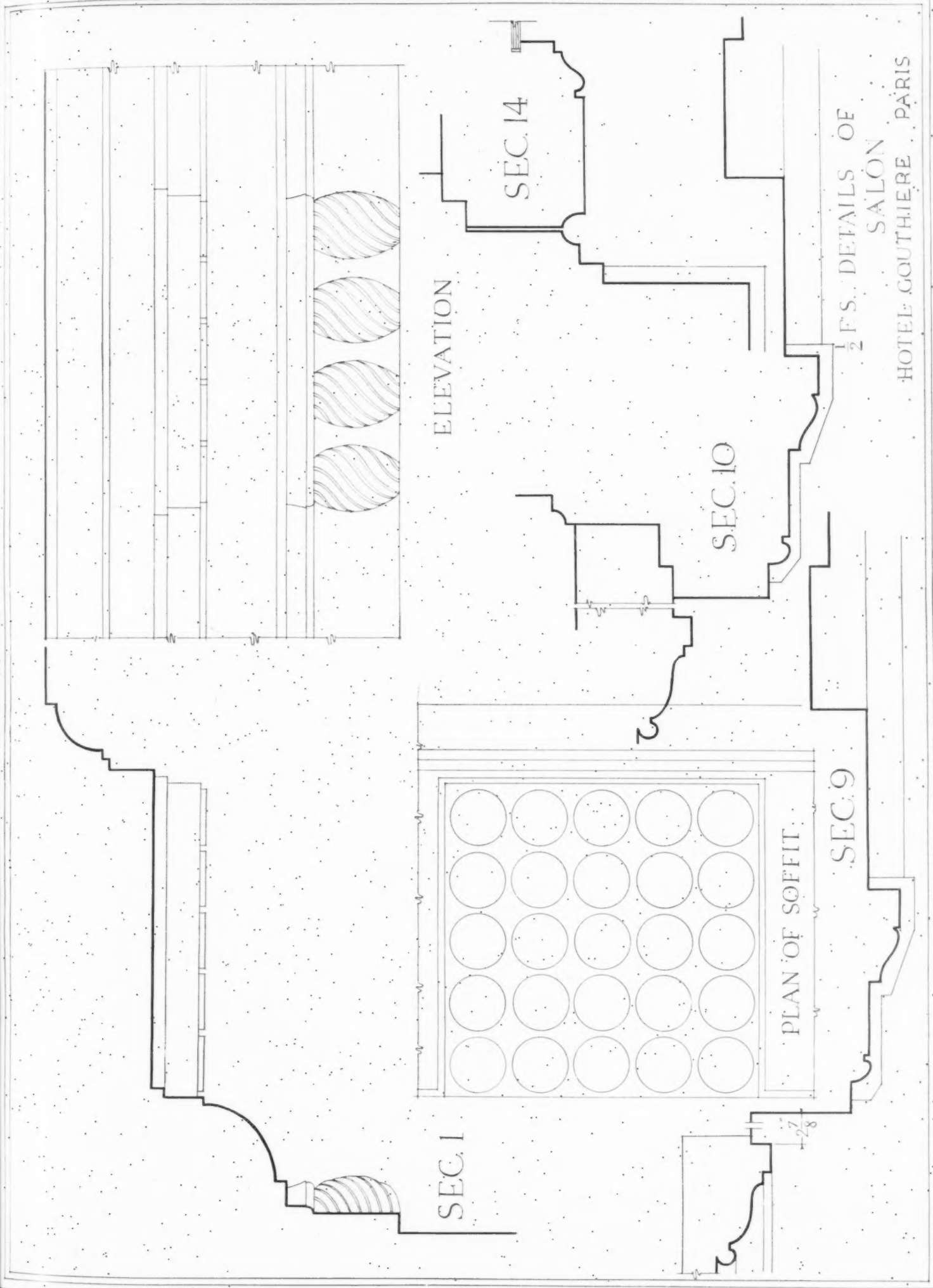


ELEVATION B~B

SALON

HOTEL GOUTHIERE
PARIS

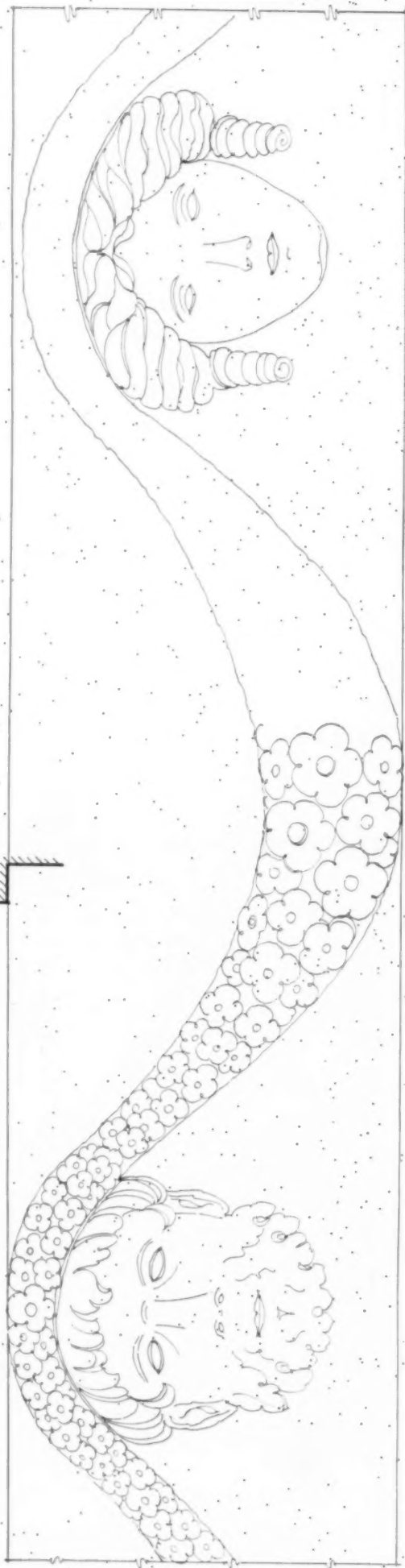




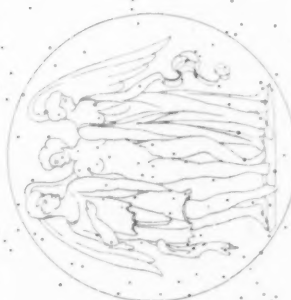
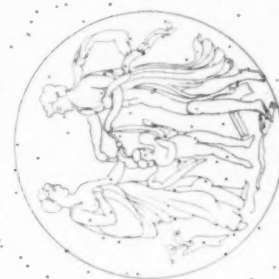
1/2 F.S. DETAILS OF

SALON

HOTEL GOUTHIERE PARIS

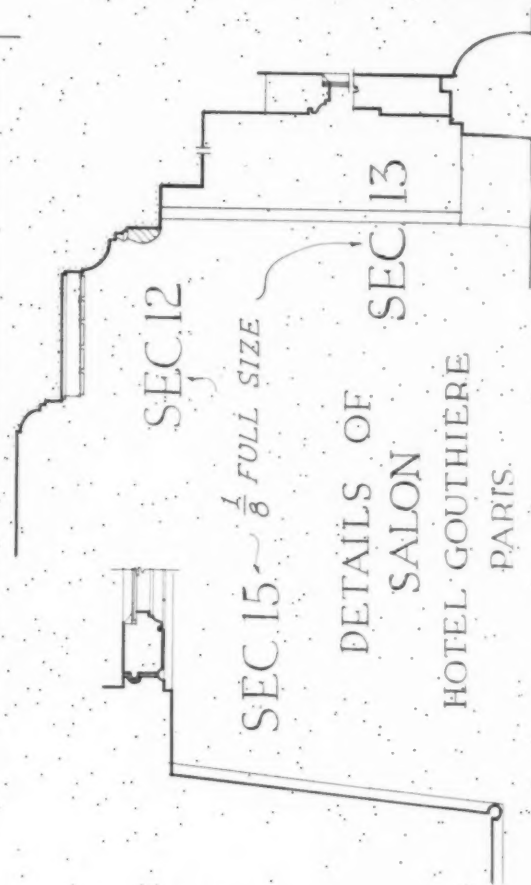
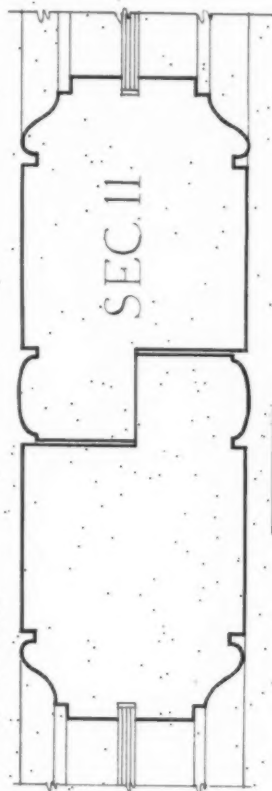


$\frac{1}{2}$ F.S. DETAIL OF PANEL OVER DOORS



ELEVATION OF MEDALLIONS

Scale $\frac{3}{4}$ " = 1 Foot



DETAILS OF
SALON

HOTEL GOUTHIERE
PARIS

DECORATION & FURNITURE

Interiors in the Early Italian Renaissance Style

By ALFRED LOWDEN

ITALIAN decoration during the fifteenth and sixteenth centuries is of commanding interest to America, as the revival of the arts, the growth of culture, and the social splendor of the life of that period are being repeated in the history of today. Of course our modern standards of living, economy of space, and conditions in general impose new adaptations. The Renaissance owed a great deal to mediæval fancy for its spirit of adventure and romanticism. During that age Italy was passing through a period of development. The vision of beauty in all its alluring forms was entering the minds of the humblest artisan and apprentice. Even the making of articles of domestic utility became a means of artistic expression, and craftsmanship became a fine art.

Factories for the manufacture of brocades, damasks, and taffetas flourished. There, also, were established studios whence came beautifully carved sculptures to adorn the homes and gardens of the wealthy, and workshops which turned out the fur-

niture that has proved such an inspiration to the modern designer. Wonderful country palaces were built, marvelous gardens were laid out, and luxury and beauty were everywhere predominant. In these magnificent villas were to be found wonderful paintings, rare examples of sculpture, rich fabrics, and the superlative from every known clime. The artists of the Renaissance excelled in the painting of frescoes and in the use of landscapes, which proved to be a wonderful medium of decoration, particularly well adapted to the limited space of a modern apartment, because the use of perspective gives an added sense of spaciousness to a room. Tapestries were also used as a means of mural decoration. Frequently these were woven from the designs of the greatest of artists, men as prominent as da Vinci and Raphael. Often the interior walls were of plain stucco, broken by niches, designed to hold statuary. Velvets and damasks, too, were often applied to the walls, much as paper was used during later periods.



Photos Loaned by John H. Huttaff, Inc.

Successful Grouping of Italian Renaissance Furnishings in a New York Apartment



'Credenza and Decorative Painting in a Modern Italian Interior



Painted Decoration on Ceiling Adapted from Italian Sixteenth Century Room

Heavy draperies of velvet and damask provided a sumptuous form of dressing the windows. Valances were elaborate, appliqued and trimmed with heavy gold fringe. These draperies were suspended from richly carved cornices and reached to the floor, elaborate tie-backs giving them a graceful sweep. Ceilings were frequently beamed, and upon the timbers were painted stenciled designs in gold and colors.

As a rule, the Italians of the Renaissance used very little wood in the construction of their floors. Marble, mosaic and tile, all of which were popular for floor materials, were equally well suited to the warm and moist Italian climate.

Until about the beginning of the fifteenth century comfort in the home in the modern sense of the word was almost unknown. With the increase of private wealth more thought was given to personal luxury and ease. The keen competition between wealthy families to outdo each other stimulated the artificers to new endeavors. Upholstery and cushions, which helped to make furniture a great deal more comfortable, also began to be used. Richly carved chairs were made still more elaborate by the use of tapestry, tooled leather and velvet.

Prior to the fifteenth century tables were more or less makeshift affairs, hardly more than heavy boards placed between trestles. During the Renaissance, however, this article of furniture was developed considerably, and was built with more permanent construction and with a richer decorative treatment. Many tables were made with two very heavy plank ends, vigorously carved, or with square legs

with feet, often terminating in lions' claws, a wooden stretcher giving additional support. Octagonal tables, supported by a central pedestal, were also frequently used. Silver plate was of great magnificence and helped to make table etiquette more refined and ceremonious as life became elaborate and complicated.

Heat was obtained from immense fireplaces, some with projecting hoods, others having above them niches with statues of the Virgin or other popular saints. The andirons were particularly interesting, many being works of art in bronze and iron. Gilt sconces and wrought iron and silver candelabra held thick candles which diffused a soft (if inadequate) light. These may be adapted for modern use by being wired for electricity and made practical though they still retain their artistic value. The Renaissance bedroom was quite a luxurious affair. Great attention was given to the bed and its accessories, the bed often placed in an alcove and screened by brocade hangings, or else set on a *predella* or dais, with damask or fine linen coverlets or bedspreads.

The general growth of wealth today, the desire for culture, and the improvement in taste combine to make the period of the Italian Renaissance one of outstanding interest to America. We adapt this style of architecture to suit our needs, so why should we not also adapt this period of interior decoration? Its restrained simplicity, which was achieved by an inborn love of beauty, is to us peculiarly appropriate. It has none of the ostentation of the later Baroque period. Modern decoration today is slowly learning to make use of much these same principles.